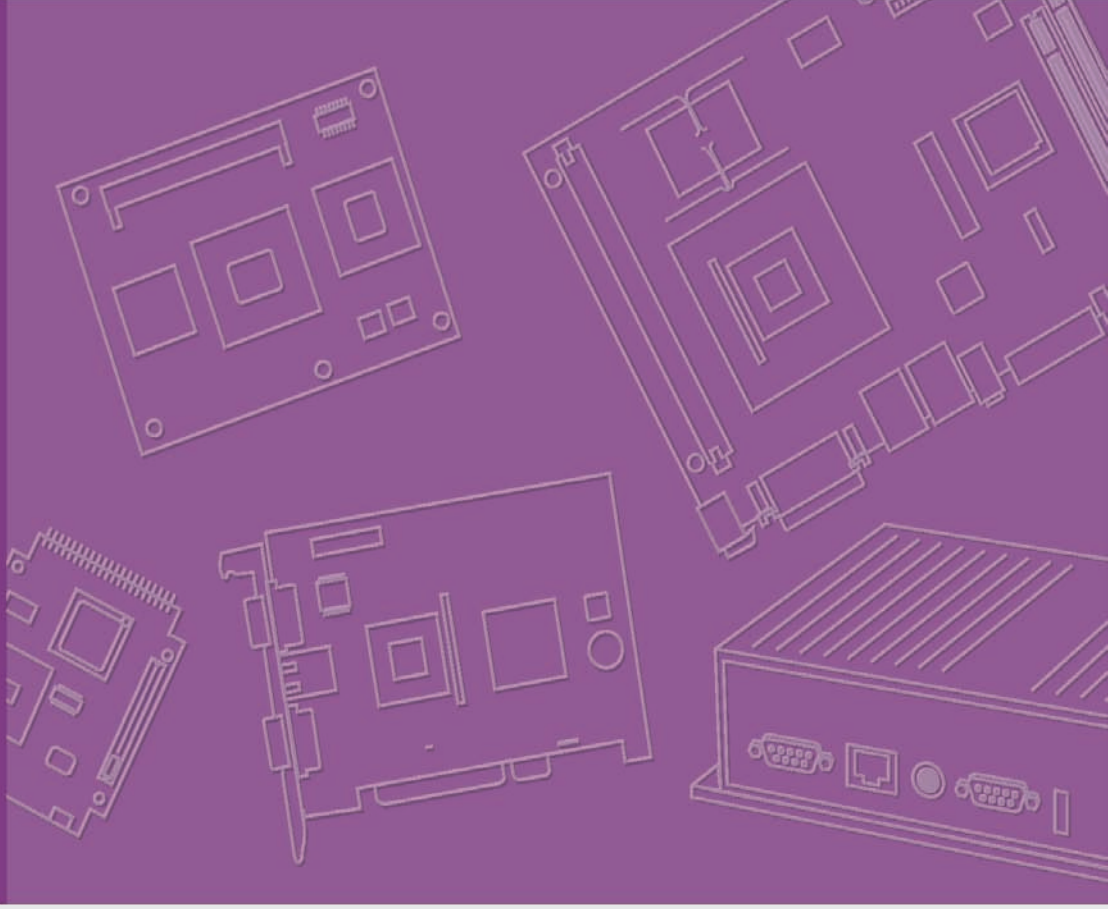


User Manual

AIMB-769

AIMB-769 Socket LGA775 Intel® Core™ 2 Quad ATX with VGA, 2 COM and Single LAN

ADVANTECH

Enabling an Intelligent Planet

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to/from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

Caution! *The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.*

Part No. 2006076900 Edition 1
Printed in Taiwan July 2011

A Message to the Customer

Advantech Customer Services

Each and every Advantech product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Advantech equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Advantech has come to be known.

Your satisfaction is our primary concern. Here is a guide to Advantech's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone.

So please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Advantech products. In fact, most problems reported are minor and are able to be easily solved over the phone.

In addition, free technical support is available from Advantech engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Declaration of Conformity

FCC

This device complies with the requirements in part 15 of the FCC rules:

Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

CPU Compatibility

CPU Family	sSpec.	Core Stepping	Power	Vcore	FSB	Mfg. Tech	L2 cache	Advantech PN	Long Life Support
Quad Q9650 3.0 GHz EM64T Quad Core	SLB8W	E0	95 W	0.8500V-1.3625V	1333	45 nm	12 MB	NA	No
Core Quad Q9400 2.66GHz EM64T Quad Core	SLB6B	R0	95 W	0.85V-1.3625V	1333	45 nm	6 MB	96MP2QD-26FB-6M7T	Yes
Core2 Quad Q9300 2.5GHz EM64T Quad Core	SLAWE	Ma	98 W	0.85V-1.3625V	1333	45 nm	6 MB	NA	No
Core2 Quad Q8200 2.33 GHz EM64T Quad Core	SLB5M	M1	95 W	0.85V-1.3625V	1333	45 nm	4 MB	NA	No
Core2 Quad Q6600 2.4GHz EM64T Quad Core	SL9UM	B3	105 W	0.85V-1.5V	1066	65 nm	8 MB	NA	No
Core2 Quad Q6600 2.4GHz EM64T Quad Core	SLACR	B3	95 W	0.85V-1.5V	1066	65 nm	8 MB	96MP2QD-24FA-8M7T	No
Core2 Duo E8500 3.16GHz EM63T Dual Core	SLAPK	C0	65 W	0.85-1.3625V	1333	45 nm	6 MB	96MP2DD-31FB-6M7B	No
Core2 Duo E8400 3.0GHz EM64T Dual Core	SLB9J	E0	65 W	0.85V-1.3625V	1333	45 nm	6 MB	96MP2DD-3FB-6M7T1	No
Core2 Duo E8400 3.0GHz EM64T Dual Core	SLAPL	C0	65 W	0.85-1.3625V	1333	45 nm	6 MB	96MP2DD-3FB-6M7T	Yes
Core2 Duo E8200 2.66GHz EM64T Dual Core	SLAPP	C0	65 W	0.85-1.3625V	1333	45 nm	6 MB	NA	No
Core2 DuoE7500 2.93GHz EM64T Dual Core	SLGTE	R0	65 W	0.8500V-V1.3625	1066	45 nm	3 MB	96MP2DD-29FA-3M7T1	No
Core2 Duo E7400 2.80GHz EM64T Dual Core	SLB9Y	R0	65 W	0.85-1.3625V	1066	45 nm	3 MB	96MP2DD-28FA-3M7T1/ SLGW3	Yes
Core2 Duo E7300 2.66GHz EM64T Dual Core	SLAPB	M0	65 W	0.85-1.3625V	1066	45 nm	3 MB	NA	No
Core2 Duo E7200 2.53GHz EM64T Dual Core	SLAVN	M0	65 W	0.85-1.3625V	1066	45 nm	3 MB	NA	No
Core2 Duo E6750 2.66GHz EM64T Dual Core	SLA9V	G0	65W	0.85-1.5V	1333	65 nm	4 MB	96MP2DD-26FB-4M7T	No
Core2 Duo E6700 2.66GHz EM64T Dual Core	SL9S7	B2	65 W	0.850-1.3525V	1066	65 nm	4 MB	96MP2DD-26FA-4M7T	Yes
Core2 Duo E6600 2.40GHz EM64T Dual Core	SL9S8	B2	65 W	0.850-1.3525V	1066	65 nm	4 MB	96MP2DD-24FA-4M7T	No
Core2 Duo E6550 2.33GHz EM64T Dual Core	SLA9X	G0	65 W	0.962V-1.350V	1333	65 nm	4 MB	NA	No
Core2 Duo E6500 2.93GHz EM64T Dual Core	SLGUH	R0	65 W	0.962V-1.350V	1066	45 nm	2 MB	96MPPD-2.93-2M7T	Yes
Core2 Duo E6400 2.13GHz EM64T Dual Core	SL9S9	B2	65 W	0.850-1.3525V	1066	65 nm	2 MB	96MP2DD-21FA-2M7T	No

Core2 Duo E6300 1.86GHz EM64T Dual Core	SL9SA	B2	65 W	0.850-1.3525V	1066	65 nm	2 MB	96MP2DD-18FA-2M7T	No
Core2 Duo E6420 2.13GHz EM64T Dual Core	SLA4T	B2	65 W	0.850-1.5V	1066	65 nm	4 MB	NA	No
Core2 Duo E6320 1.86GHz EM64T Dual Core	SLA4U	B2	65 W	0.850-1.5V	1066	65 nm	4 MB	NA	No
Core2 Duo E5300 2.6GHz EM64T Dual Core	SLB9U	R0	65 W	0.85V-1.3625V	800	45 nm	2 MB	NA	Yes
Core2 Duo E4700 2.6GHz EM64T Dual Core	SLALT	G0	65 W	1.162V-1.312V	800	65 nm	2 MB	NA	No
Core2 Duo E4500 2.2GHz EM64T Dual Core	SLA95	M0	65 W	0.850-1 5V	800	65 nm	2 MB	NA	No
Core2 Duo E4400 2.0GHz EM64T Dual Core	SLA3F	L2	65 W	1.162V-1.312V	800	65 nm	2 MB	NA	No
Core2 Duo E4300 1.8GHz EM64T Dual Core	SL9TB	L2	65 W	0.85V-1.5V	800	65 nm	2 MB	96MP2DD-18F8-2M7T	Yes
Pentium Dual-Core 1.8GHz E2160	SLA8Z	M0	65 W	0.85V-1.5V	800	65 nm	1 MB	96MPPD-1.8F8-1M7T	Yes
Pentium Dual-Core 1.6GHz E2140	SLA3J	L2	65 W	1.162V-1.312V	800	65 nm	1 MB	NA	No
Celeron E1200 1.6GHz EM64T	SLAQW	M0	65 W	1.162V-1.312V	800	65 nm	512 KB	96MPC2-1.6F8-5K7T	No
Celeron 440 2GHz	SL9XL	A1	35 W	1.0-1.3375V	800	65 nm	512 KB	96MPC4-2.0F8-5K7T	Yes
Celeron 430 1.8GHz	SL9XN	A1	35 W	1.0-1 3375V	800	65 nm	512 KB	96MPC4-1.8F8-5K7T	No
Celeron 420 1.6GHz	SL9XP	A1	35 W	1.0-1 3375V	800	65 nm	512 KB	NA	No

Memory Compatibility

Brand	Size	Speed	Type	ECC	Vendor PN	Advantech PN	Memory
Transcend	1 GB	DDR3 1066	DDR3	N	TS128MLK64V1U/ TS2KNU28100-1S	96D3-1G1066NN-TR	SEC K4B1G0846D-HCF8 (128x8)
	1 GB	DDR3 1066	DDR3	N	TS128MLK64V1U	96D3-1G1066NN-TR	SEC K4B1G0846D HCH9 ENJ038A3 (128x8)
	2 GB	DDR3 1066	DDR3	N	TS256MLK64V1U/ TS5KNU28300-1S	96D3-2G1066NN-TR	SEC K4B1G0846D-HCF9(128x8)
Apacer	1 GB	DDR3 1066	DDR3	N	78.01GC3.420	96D3-1G1066NN-AP	ELPIDA J1108BDBG-DJ-F (128x8)
	2 GB	DDR3 1066	DDR3	N	78.A1GC3.421	96D3-2G1066NN-AP	ELPIDA J1108BDBG-DJ-F (128x8)
DSL	1 GB	DDR3 1066	DDR3	N	D3UE28081XH18AB	NA	ELPIDA J1108BDSE-DJ-F (128x8)
	2 GB	DDR3 1066	DDR3	N	D3UE28082XH18AB	NA	ELPIDA J1108BDSE-DJ-F (128x8)
Transcend	1 GB	DDR3 1333	DDR3	N	TS128MLK64V3U	96D3-1G-1333NN-TR	ELPIDA J1108BDBG-DJ-F(128x8)
	1 GB	DDR3 1333	DDR3	N	TS128MLK64V3U	NA	Micron 9GF22 D9KPT (128x8)
	2 GB	DDR3 1333	DDR3	N	TS256MLK64V3U	NA	SEC 907 HCH9 K4B1G08460(128x8)
Apacer	1 GB	DDR3 1333	DDR3	N	78.01GC6.420	96D3-1G1333NN-AP	ELPIDA J1108BFBG-DJ-F(128x8)
	2 GB	DDR3 1333	DDR3	N	78.A1GC6.421	96D3-2G1333NN-AP	ELPIDA J1108BDBG-DJ-F (128x8)
DSL	1 GB	DDR3 1333	DDR3	N	D3UE28081XH18AB	NA	ELPIDA J1108BDSE-DJ-F (128x8)
	2 GB	DDR3 1333	DDR3	N	D3UE28082XH18AB	NA	ELPIDA J1108BDSE-DJ-F (128x8)
Kingston	1 GB	DDR3 1333	DDR3	N	KVR1333D3N9/1G	NA	HYNIX H5TQ1G83BFR H9C 928AK (128x8)
	2 GB	DDR3 1333	DDR3	N	TS128MLK64V3U	NA	ELPIDA J1108BDBG-DJ-F 093309DLK20 (256x8)
ATP	4 GB	DDR3 1333	DDR3	N	AQ12M64B8BKH9S	NA	SAMSUNG 949 K4B2G0846B-HCH9 (256x8)

Ordering Information

AIMB-769 Ordering Information						
Part Number	**Chipset**	**Display**	**GbE**	**PCIe x 16**	**PCIe x 1**	**PCI**
AIMB-769VG-00A1E	G41/ICH7	VGA	1	1	1	5

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Initial Inspection

Before you begin installing your motherboard, please make sure that the following materials have been shipped:

- AIMB-769 Socket LGA 775 Intel® Core™ 2 Quad / Core™ 2 Duo / Intel® Pentium™ / Celeron™ FSB 1333 MHz Processor-based ATX Motherboard with VGA, 2 COM and single LAN
- 1 x AIMB-769 startup manual
- 1 x CD with driver, utility and user manual
- 2 x Serial ATA HDD data cable
- 2 x Serial ATA HDD power cable
- 1 x I/O port bracket
- 1 x jumper package
- 1 x warranty card

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the AIMB-769 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. As you unpack the AIMB-769, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

Contents

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Features 2
1.3 Specifications 2
1.3.1 System 2
1.3.2 Memory 2
1.3.3 Input/Output 2
1.3.4 Graphics 3
1.3.5 Ethernet LAN 3
1.3.6 Industrial features 3
1.3.7 Mechanical and environmental specifications 3
1.4 Jumpers and Connectors 3
Table 1.1: Jumpers 3
Table 1.2: Connectors 4
1.5 Board layout: Jumper and Connector Locations 5
Figure 1.1 Jumper and Connector Location 5
Figure 1.2 I/O Connectors 5
1.6 AIMB-769 Block Diagram 6
Figure 1.3 AIMB-769 Block Diagram 6
1.7 Safety Precautions 7
1.8 Jumper Settings 8
1.8.1 How to set jumpers 8
1.8.2 CMOS clear (CMOS1) 8
Table 1.3: CMOS1 8
1.8.3 Chassis intruction connector (JCASE1) 8
1.8.4 ATX/AT mode selector (PSON1) 8
Table 1.4: ATX/AT mode selector (PSON1) 8
1.9 System Memory 9
1.10 Memory Installation Procedures 9
1.11 Cache Memory 9
1.12 Processor Installation 9

Chapter 2 Connecting Peripherals 11

2.1 Introduction 12
2.2 USB and LAN Ports (USB12/LAN1_USB34) 12
Table 2.1: LAN LED Indicator 12
2.3 VGA Connector (VGA1) 13
2.4 Serial Ports (COM1 ~ COM2) 13
2.5 PS/2 Keyboard and Mouse Connector (KBMS1) 14
2.6 CPU Fan Connector (CPUFAN1) 15
2.7 System FAN Connector (SYSFAN1/2) 15
2.8 Front Panel Connectors (JFP1/2/3) 16
2.8.1 ATX Soft Power Switch (JFP1) 16
2.8.2 Reset Connector (JFP1) 16
2.8.3 External Speaker (JFP2) 17
2.8.4 HDD LED Connector (JFP2) 17
2.8.5 SMBus Connector (JFP2) 17
2.8.6 Power LED and keyboard lock connector (JFP3/PWR_LED&KEY LOCK) 18
Table 2.2: ATX power supply LED status (No support for AT power) 18
2.9 Line Out and Mic In Connector (AUDIO1) 19
2.10 Serial ATA Interface (SATA 1/2/3/4) 19

2.11 ATX Power Connector (ATX12V1, EATXPWR1) 20
2.12 Front Panel Audio Connector (FPAUD1) 21
2.13 USB 2.0 Connector (USB 56, 78) 21
2.14 Digital Audio Connector(SPDIF_OUT1) 22
2.15 Connector to alarm board for monitoring (VOLT1) 23
2.16 Serial Port DC Power Switch (CN32, CN33) 24

Chapter 3 BIOS Operation 25

3.1 Introduction 26
3.2 BIOS Setup 26
3.2.1 Main Menu 27
3.2.2 Advanced BIOS Features 28
3.2.3 Advanced PCI/PnP Setting 36
3.2.4 Boot Setting 37
3.2.5 Boot Device Priority 38
3.2.6 Hard Disk Drives 38
3.2.7 Removable Drivers 38
3.2.8 Security Setting 38
3.2.9 Advanced Chipset Settings 39
3.2.10 Exit Option 42

Chapter 4 Chipset Software Installation Utility 43

4.1 Before you begin 44
4.2 Introduction 44
4.3 Windows XP/Windows 7 Driver Setup 45

Chapter 5 VGA Setup 47

5.1 Introduction 48
5.2 Windows XP/7 48

Chapter 6 LAN Configuration 49

6.1 Introduction 50
6.2 Features 50
6.3 Installation 50
6.4 Windows XP/ Windows 7 Setup (REALTEK RTL8111DL) 50

Appendix A Programming the Watchdog Timer . 51

A.1 Programming the Watchdog Timer 52
A.1.1 Watchdog timer overview 52
A.1.2 Programming the Watchdog Timer 52
Table A.1: Watchdog Timer Registers 54
A.1.3 Example Program 55

Appendix B I/O Pin Assignments 59

B.1 USB Header (USB56) 60
Table B.1: USB Header (USB56) 60
B.2 USB Header (USB78) 60
Table B.2: USB Header (USB78) 60
B.3 VGA Connector (VGA1) 61

Table B.3: VGA Connector (VGA1) 61
B.4 PS/2 Keyboard and Mouse Connector (KBMS1) 61
Table B.4: PS/2 Keyboard and Mouse Connector (KBMS1) 61
B.5 CPU Fan Power Connector (CPUFAN1) 62
Table B.5: CPU Fan Power Connector (CPUFAN1) 62
B.6 System Fan Power Connector (SYSFAN1/SYSFAN2) 62
Table B.6: System Fan Power Connector (SYSFAN1/SYSFAN2) 62
B.7 Front Panel Connectors (JFP1/2) 63
B.7.1 Power LED & Keyboard Lock Connector (JFP3) 63
Table B.7: Power LED & Keyboard Lock Connector (JFP3) 63
B.7.2 Power switch/HDD LED/SMBus/Speaker (JFP1/JFP2) 63
Table B.8: Power Switch/HDD LED/SMBus/Speaker (JFP1/JFP2) 64
B.8 ATX1 12 V Auxiliary Power Connector (ATX12V) 64
Table B.9: ATX1 12 V Auxiliary Power Connector (ATX12V1) 64
B.9 ATX Power Connector (EATXPWR1) 64
Table B.10:ATX Power Connector (ATX2) 64
B.10 USB/LAN ports (LAN1_USB34) 65
Table B.11:USB Port 65
Table B.12:Ethernet 10/100/1000 Base-T RJ-45 Port 65
B.11 Line Out, Mic In Connector (AUDIO1) 65
B.12 Serial ATA1 (SATA1) 65
Table B.13:Serial ATA0 (SATA1) 65
B.13 Serial ATA2 (SATA2) 66
Table B.14:Serial ATA1 (SATA2) 66
B.14 Serial ATA3 (SATA3) 66
Table B.15:Serial ATA2 (SATA3) 66
B.15 Serial ATA4 (SATA4) 66
Table B.16:Serial ATA3 (SATA4) 66
B.16 AT/ATX Mode (PSON1) 66
Table B.17:AT/ATX Mode (PSON1) 66
B.17 FPAUD1(Front Panel Audio Connector) 67
Table B.18:Front Panel Audio Connector (FPAUD1) 67
B.18 System I/O Ports 67
Table B.19:System I/O Ports 67
B.19 JCASE1(Open Case Connector) 68
Table B.20:Case Open Connector(JCASE1) 68
B.20 DMA Channel Assignments 68
Table B.21:DMA Channel Assignments 68
B.21 Interrupt Assignments 68
Table B.22:Interrupt Assignments 68
B.22 1st MB Memory Map 69
Table B.23:1st MB Memory Map 69

Chapter 1

General Information

1.1 Introduction

AIMB-769 is designed with Intel® G41 and ICH7 Express chipsets for industrial applications that need high computing and rich strong I/O capability. It supports 45nm and 65nm Intel® Core 2 Duo, Core 2 Quad, Pentium Dual-Core and Celeron 400 series processors with FSB up to 1333 MHz and DDR3 800/1066 MHz SDRAM up to 4 GB. AIMB-769 also features excellent graphic processing capability from its embedded Intel® Graphics Media Accelerator X4500 with shared memory up to 352 MB—providing strong 2D/3D graphic processing power that saves on extra cost, power consumption and thermal design effort caused by an add-on graphic card.

1.2 Features

- **G41 chipset:** Supports 800/1066/1333MHz front side bus
- **I/O connectivity:** AIMB-769 supports 1 PCIe x16 slot, 1 PCIe x1 slot, and 5 PCI. It also supports single Gigabit LAN via PCIe x1 bus, 4 SATAII connectors and 8 USB 2.0 ports
- **COM port with DC power support:** AIMB-769 supports two RS-232 with DC power (+5 V or +12 V) support which is useful for some industrial applications for simplifying cable deployment
- **Standard ATX form factor with industrial features:** AIMB-769 provides industrial features like long-life product support, reliable operation under wide temperature ranges, watchdog timer, CMOS backup functions and more.
- **BIOS CMOS backup and restore:** When BIOS CMOS setup has been completed, data in the CMOS RAM is automatically backed up to the Flash ROM. This is particularly useful in harsh environments which may cause setup data loss such as battery failure. Upon such an error occurring, the BIOS will check the data, and automatically restore the original data for booting
- **Optimized integrated graphic solution:** Intel® Graphics Media Accelerator X4500 with strong 2D/3D graphic processing power.

1.3 Specifications

1.3.1 System

- **CPU:** LGA 775 Intel Core 2 Quad up to 3.0 GHz/Core 2 Duo up to 3.16 GHz/ Pentium Dual-Core up to 2.93 GHz/Celeron up to 2.2 GHz with 800/1066/1333 MHz front side bus
- **BIOS:** AMI SPI 16-Mbit BIOS
- **System chipset:** Intel G41 with ICH7
- **SATA II hard disk drive interface:** Four on-board SATA II connectors with data transmission rate up to 300 MB/s

1.3.2 Memory

- **RAM:** Up to 4 GB in 2 slots 240-pin DIMM sockets. Supports dual channel DDR3 800/1066 MHz SDRAM

1.3.3 Input/Output

- **PCIe bus:** 1 PCIe x16 slot and 1 PCIe x1 slot
- **PCI Bus:** 5 PCI slots, 32-bit, 33 MHz PCI 2.2 compliant
- **Floppy disk drive interface:** Supports one floppy disk drive, 5 1/4" (360 KB and 1.2 MB) or 3 1/2" (720 KB, 1.44 MB). BIOS can enable/disable this function.

- **Serial ports:** Two RS-232 serial ports with DC power(+5 V or +12 V) support for industrial applications
- **Keyboard/mouse connector:** Supports standard PS/2 keyboard and mouse
- **USB port:** Supports up to eight USB 2.0 ports with transmission rates up to 480 Mbps. Four ports are on-board pin heaters and four ports are external ports

1.3.4 Graphics

- **Controller:** Chipset integrated VGA controller
- **Display memory:** Dynamically shared system memory up to 352 MB
- **CRT:** Up to 2048 x 1536 resolution @ 75 Hz refresh rate

1.3.5 Ethernet LAN

- Supporting single 10/100/1000Base-T Ethernet port via PCIe x1 bus
- **Controller:** REALTEK RTL8111DL

1.3.6 Industrial features

- **Watchdog timer:** This function can reset system when it is triggered. The watchdog timer is programmable, with units in minutes and seconds (255 levels).

1.3.7 Mechanical and environmental specifications

- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F, depending on CPU)
- **Storage temperature:** -40 ~ 85° C (-40 ~ 185° F)
- **Humidity:** 5 ~ 95% non-condensing
- **Power supply voltage:** +3.3 V, +5 V, +12 V, -12 V, 5 V_{SB}
- **Power consumption:** Maximum: +5 V at 1.76 A, +3.3 V at 2.28 A, +12 V at 4.7 A, 5 VSB at 0.19 A, (Intel Core 2 Quad Q9650 3.0 GHz (1333 MHz FSB), 2 x 1 GB DDR3 1066 SDRAM)
- **Board size:** 304.8 x 228.6 mm (12" x 9.6")
- **Board weight:** 0.5 kg (1.68 lb)

1.4 Jumpers and Connectors

Connectors on the AIMB-769 motherboard link it to external devices such as hard disk drives and keyboard. In addition, the board has a number of jumpers used to configure the system for your application.

The tables below list the function of each of the board jumpers and connectors. Later sections in this chapter give instructions on setting jumpers. Chapter 2 gives instructions for connecting external devices to your motherboard.

Table 1.1: Jumpers

Label	Function
CMOS1	Clear CMOS
JCASE1	Chassis instruction connector
PSON1	AT/ATX mode selector
JOBS1	OBS Alarm switch
JWDT1	Watchdog timer output option

Table 1.2: Connectors	
Label	**Function**
JFP1	Power Switch / Reset connector
JFP2	External speaker / HDD LED connector / SMBus connector
JFP3	Keyboard Lock and Power LED
	Suspend: Fast flash (ATX)
	System On: ON (ATX/AT)
	System Off: OFF (AT)
	System Off: Slow flash (ATX)
USB56	USB port 5, 6
USB78	USB port 7, 8
VGA1	VGA connector
VOLT1	Voltage monitoring for alarm board
COM 1,2	Serial port: RS-232
KBMS1	PS/2 keyboard and Mouse connector
KBMS2	PS/2 keyboard and Mouse connector (on board)
CPUFAN1	CPU FAN connector
SYSFAN1	System FAN connector 1
SYSFAN2	System FAN connector 2
USB12	USB port 1, 2
LAN1_USB34	LAN1/USB port 3, 4
SATA 1 ~ 4	Serial ATA connector
ATX12V1	ATX 12V Auxiliary power connector
EATXPWR1	ATX power connector
AUDIO1	Audio connector
FPAUD1	Front Panel audio connector
SPDIF_OUT1	Digital Audio connector
FDD1	FDD connector
CN32	COM1 Power Switch
CN33	COM2 Power Switch
IR_CON	Infrared connector

1.5 Board layout: Jumper and Connector Locations

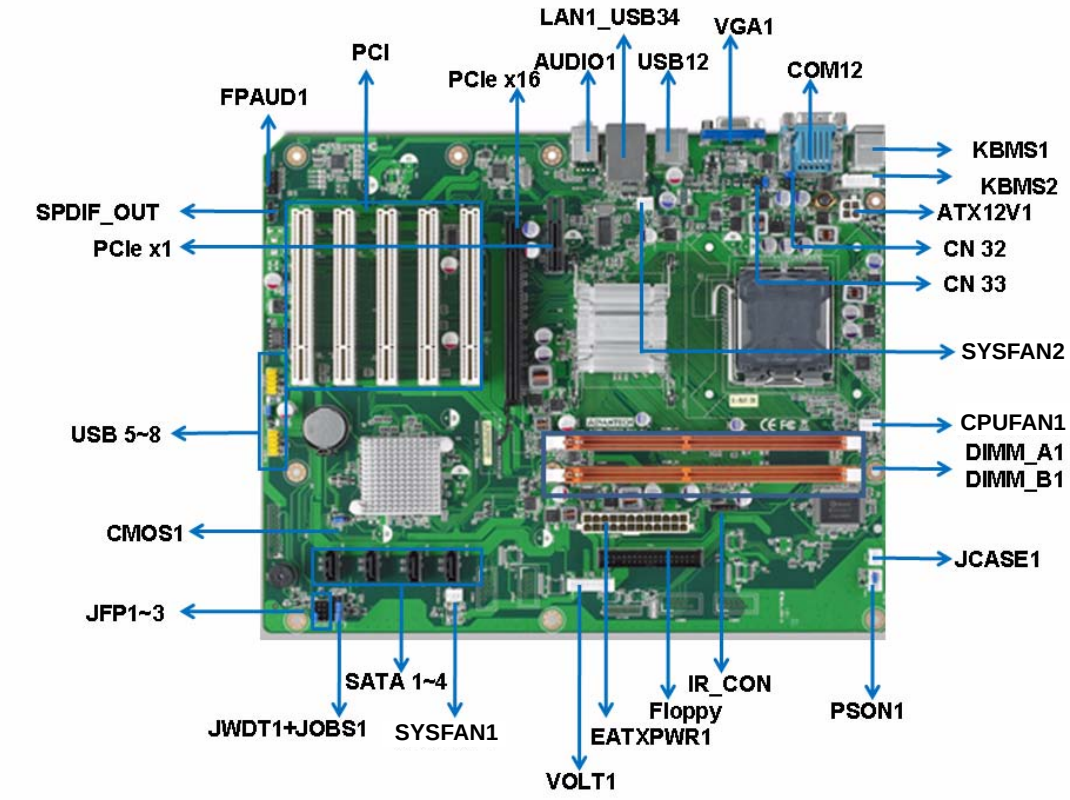


Figure 1.1 Jumper and Connector Location

Figure 1.2 I/O Connectors

1.6 AIMB-769 Block Diagram

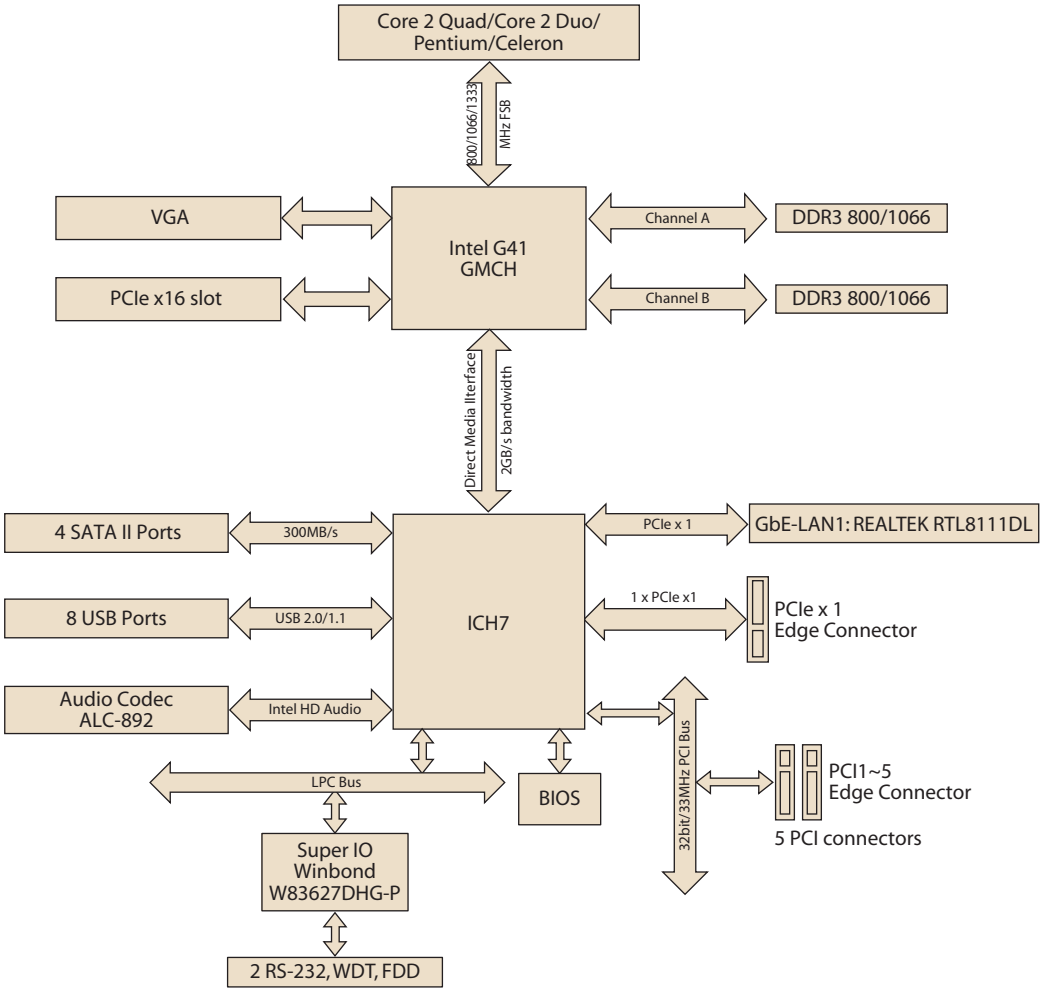


Figure 1.3 AIMB-769 Block Diagram

1.7 Safety Precautions

Warning! *Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.*

Caution! *Always ground yourself to remove any static charge before touching the motherboard. Modern electronic devices are very sensitive to electrostatic discharges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

Caution! *The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.*

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

1.8 Jumper Settings

This section provides instructions on how to configure your motherboard by setting the jumpers. It also includes the other board's default settings and your options for each jumper.

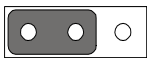
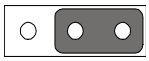
1.8.1 How to set jumpers

You can configure your motherboard to match the needs of your application by setting the jumpers. A jumper is a metal bridge that closes an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” (or turn ON) a jumper, you connect the pins with the clip. To “open” (or turn OFF) a jumper, you remove the clip. Sometimes a jumper consists of a set of three pins, labeled 1, 2, and 3. In this case you connect either pins 1 and 2, or 2 and 3. A pair of needle-nose pliers may be useful when setting jumpers.

1.8.2 CMOS clear (CMOS1)

The AIMB-769 motherboard contains a jumper that can erase CMOS data and reset the system BIOS information. Normally this jumper should be set with pins 1-2 closed. If you want to reset the CMOS data, set J1 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed. This procedure will reset the CMOS to its default setting.

Table 1.3: CMOS1

Function	Jumper Setting	
*Keep CMOS data	1 	1-2 closed
Clear CMOS data	1 	2-3 closed
*default setting		

1.8.3 Chassis intrusion connector (JCASE1)

The AIMB-769 motherboard contains a jumper for a chassis open sensor. When it is set, the buzzer on the motherboard beeps when the case is opened.

1.8.4 ATX/AT mode selector (PSON1)

Table 1.4: ATX/AT mode selector (PSON1)

Function	Jumper Setting
AT mode	1-2 closed
*ATX mode	2-3 closed
*default setting	

1.9 System Memory

AIMB-769 has two 240-pin memory sockets for non-ECC DDR3 800/1066 MHz memory modules with maximum capacity of 4 GB (Maximum 2 GB for each DIMM).

Please note that AIMB-769 does NOT support registered DIMMs.

1.10 Memory Installation Procedures

To install DIMMs, first make sure the two handles of the DIMM socket are in the “open” position. i.e. The handles lean outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket, and then press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the DIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

1.11 Cache Memory

The AIMB-769 supports a CPU with one of the following built-in full speed L2 caches:

- 12 MB for Intel Core 2 Quad CPU
- 6 MB for Intel Core 2 Duo CPU
- 8 MB for Intel Pentium Dual-Core CPU
- 512 KB for Intel Celeron CPU

The built-in second-level cache in the processor yields much higher performance than conventional external cache memories.

1.12 Processor Installation

The AIMB-769 is designed for LGA 775, Intel Core 2 Quad, Intel Core 2 Duo, Celeron D and Pentium Dual-Core.

Chapter 2

Connecting Peripherals

2.1 Introduction

You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a number of cards installed or have a packed chassis, you may need to partially remove a card to gain access to all the connections.

2.2 USB and LAN Ports (USB12/LAN1_USB34)

The AIMB-769 provides up to eight USB ports (Universal Serial Bus). The USB interface complies with USB specification rev. 2.0 supporting transmission rates up to 480 Mbps and is fuse protected. The USB function can be disabled in the system BIOS.

The AIMB-769 is equipped with one high-performance 1000 Mbps Ethernet LAN. It is supported by all major network operating systems. The RJ45 jack is on the rear plate providing 1000Base-T operation.

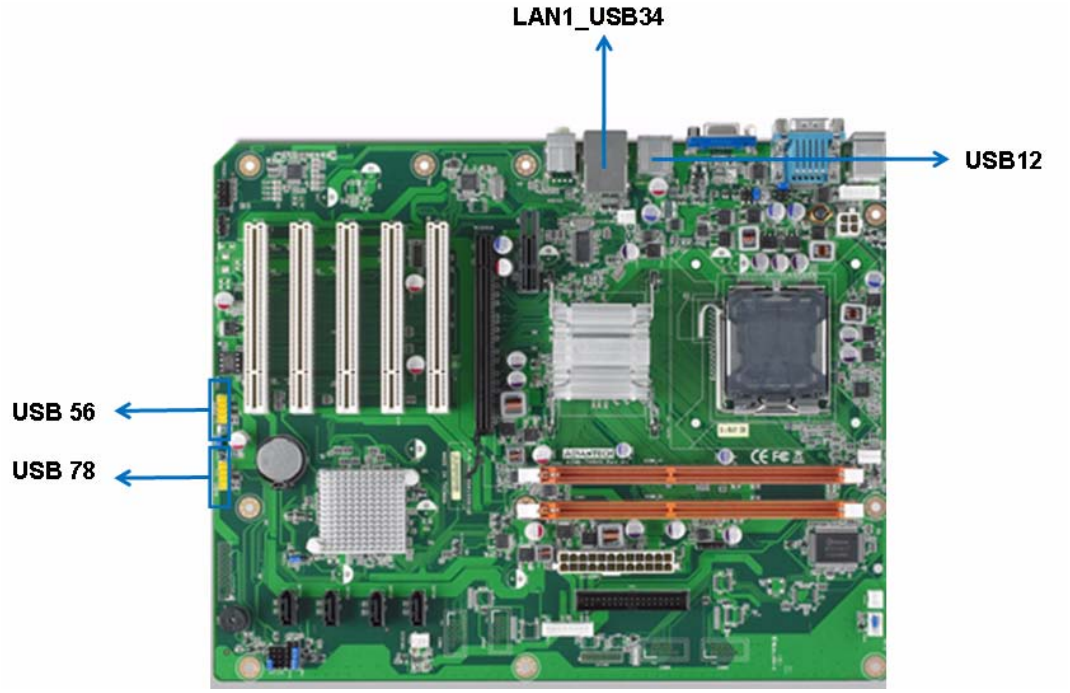
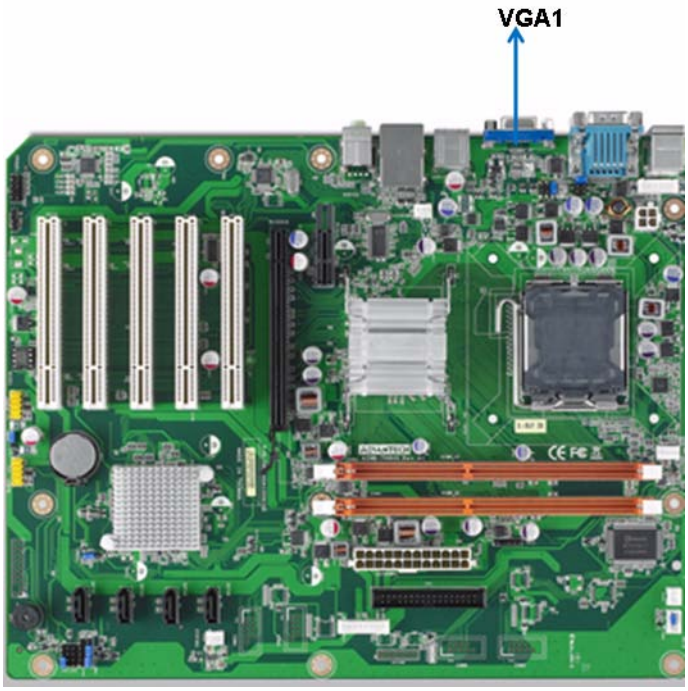


Table 2.1: LAN LED Indicator

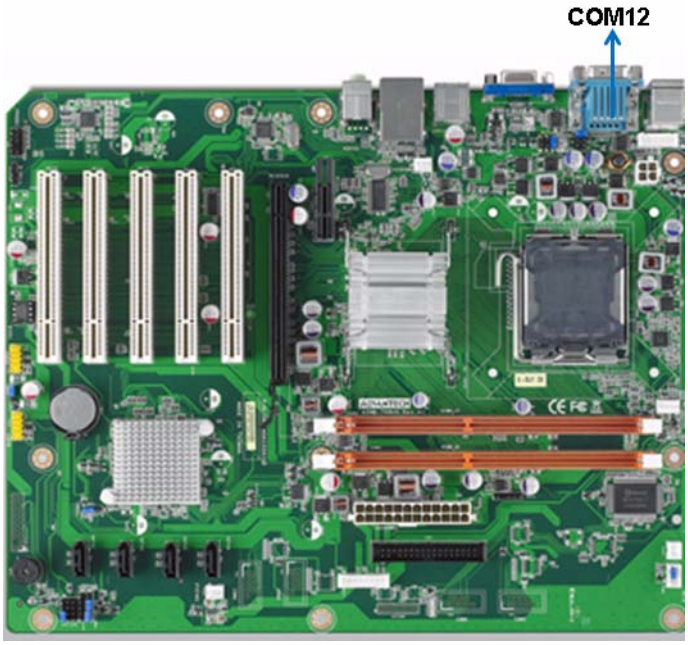
LAN Mode	Lan Indicator
1 Gbps Link on	LED1 Green on
100 Mbps Link on	LED1 Orange on
Active	LED2 Green flash

2.3 VGA Connector (VGA1)



The AIMB-769 includes a VGA interface that can drive conventional CRT displays. VGA1 is a standard 15-pin D-SUB connector commonly used for VGA. Pin assignments for CRT connector VGA1 are detailed in Appendix B.

2.4 Serial Ports (COM1 ~ COM2)

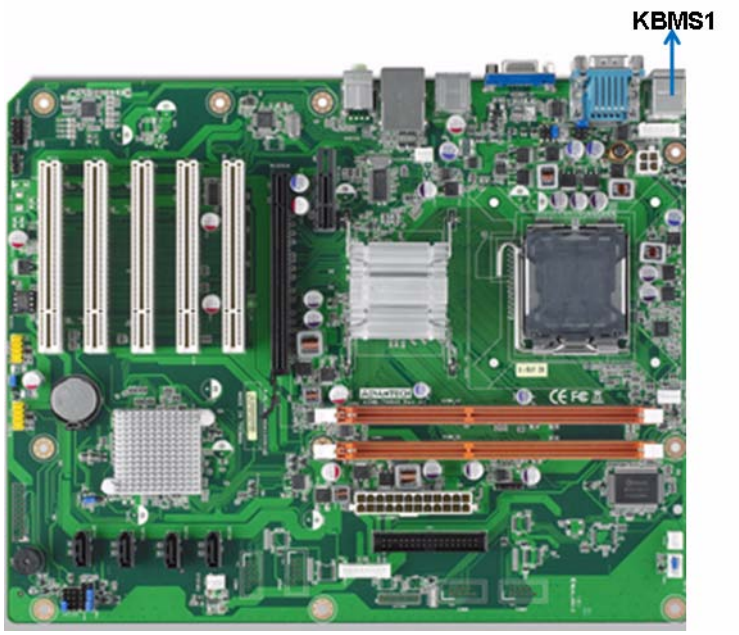


AIMB-769 supports two serial ports of RS-232. Both ports can connect to serial devices, such as a mouse or a printer, or to a communications network, and both

ports' 9th pin could be set as with DC power support of +5 V or +12 V or ring function via CN32 or CN33.

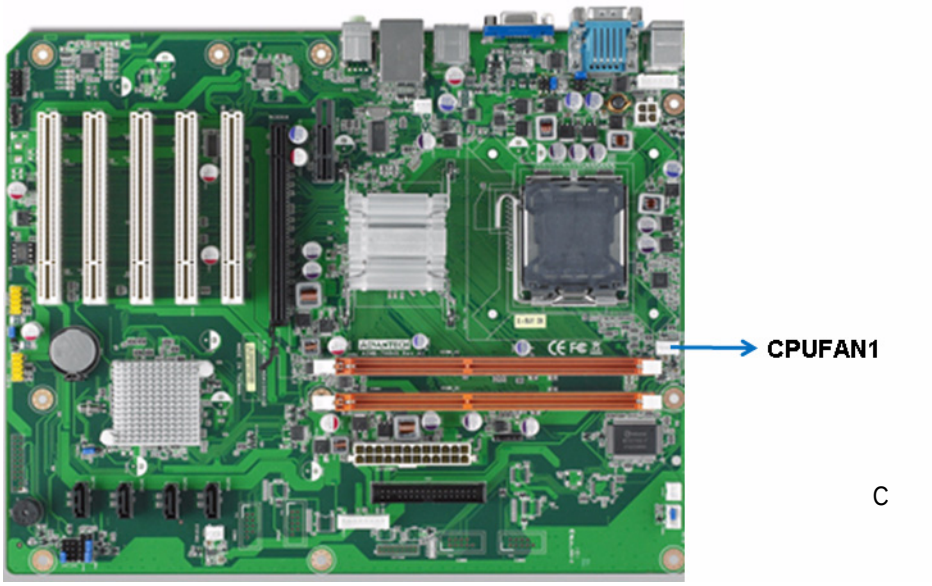
The IRQ and address ranges for both ports are fixed. However, if you want to disable the port or change these parameters later, you can do this in the system BIOS. Different devices implement the RS-232 in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

2.5 PS/2 Keyboard and Mouse Connector (KBMS1)



Two 6-pin Mini-Din connectors (KBMS1) on the motherboard provide connection to a PS/2 keyboard and a PS/2 mouse, respectively.

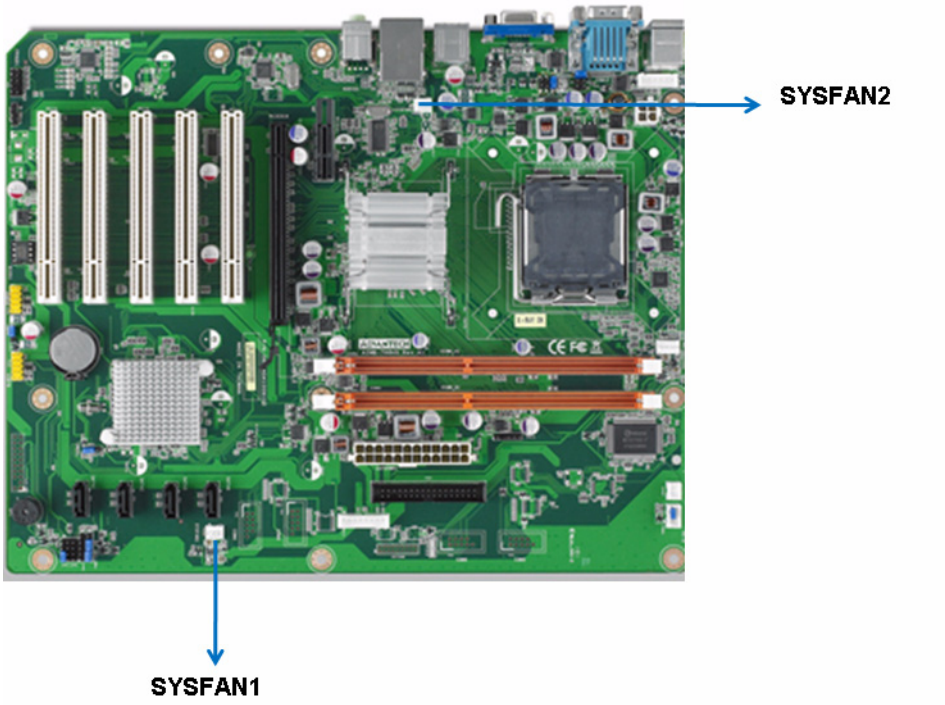
2.6 CPU Fan Connector (CPUFAN1)



C

If a fan is used, this connector supports cooling fans of 500 mA (6 W) or less. AIMB-769 supports smart fan control, whatever 3 pin or 4 pin fan is installed, and the user has enabled this feature in the BIOS menu.

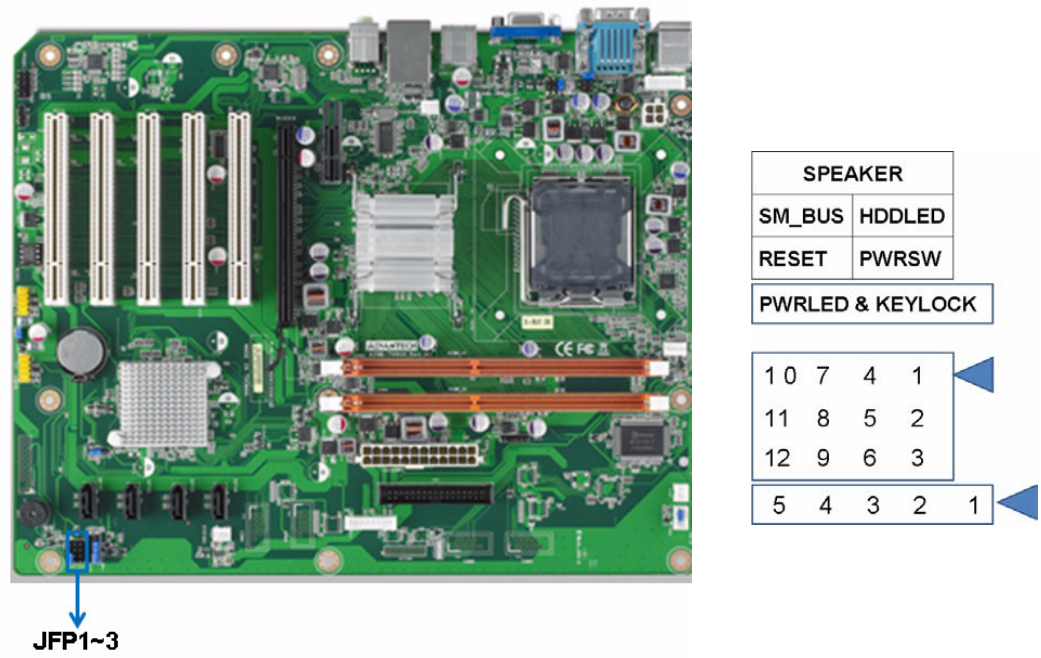
2.7 System FAN Connector (SYSFAN1/2)



SYSFAN2 of AIMBV-769 doesn't support smart fan control, so it's always at full rotational speed.

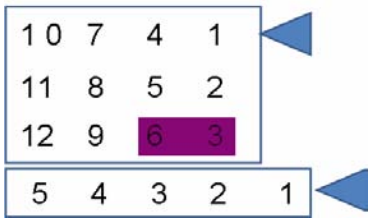
2.8 Front Panel Connectors (JFP1/2/3)

There are several external switches to monitor and control the AIMB-769. JFP1+JFP2 are for front panel (HDD LED/SNMP SMBus/Speaker pin header/ Power switch). JFP3 is for Power LED and Keyboard lock timer.



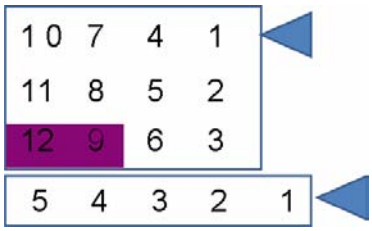
2.8.1 ATX Soft Power Switch (JFP1)

If your computer case is equipped with an ATX power supply, you should connect the power on/off button on your computer case to ATX power switch (pin 3, 6). This connection enables you to turn your computer on and off.



2.8.2 Reset Connector (JFP1)

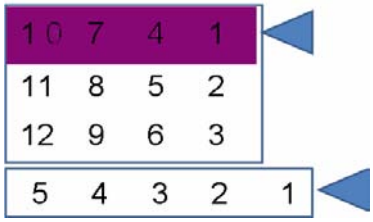
Many computer cases offer the convenience of a reset button. Connect the wire from the reset button.



JFP1	
pin.3	#PWR_SW
pin.6	GND
pin.9	#RST_SW
pin.12	GND

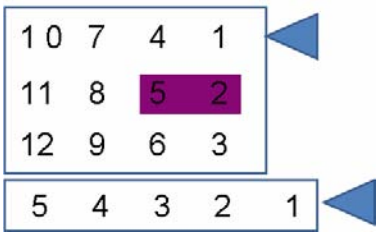
2.8.3 External Speaker (JFP2)

The external speaker is a 4-pin connector. If there is no external speaker, the AIMB-769 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 as closed.



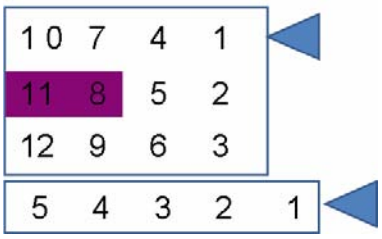
2.8.4 HDD LED Connector (JFP2)

You can connect an LED to this connector to indicate HDD status.



2.8.5 SMBus Connector (JFP2)

This connector is reserved to allow users to connect with AIMB-769 via SMBus.



JFP2			
pin.1	5 V	pin.2	HDD_LED+
pin.4	NC	pin.5	HDD_LED-
pin.7	SPK	pin.8	SM_DAT
pin.10	SPK	pin.11	SM_CLK

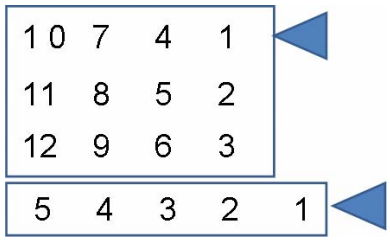
2.8.6 Power LED and keyboard lock connector (JFP3/ PWR_LED&KEY LOCK)

(JFP3 / PWR_LED&KEY LOCK) is a 5-pin connector for the power on LED and Key Lock function. The Power LED cable should be connected to pin 1-3. The key lock button cable should be connected to pin 4-5.

There are 3 modes for power supply connection which is selected by PSON1 connector. The first is “ATX power mode”, whereby the system is turned on/off through software and other means. The second is “AT Power Mode”, whereby the system is turned on/off by the power supply switch on the back. The third is another “AT Power Mode” which uses the front panel power switch. The power LED status is indicated as in following table:

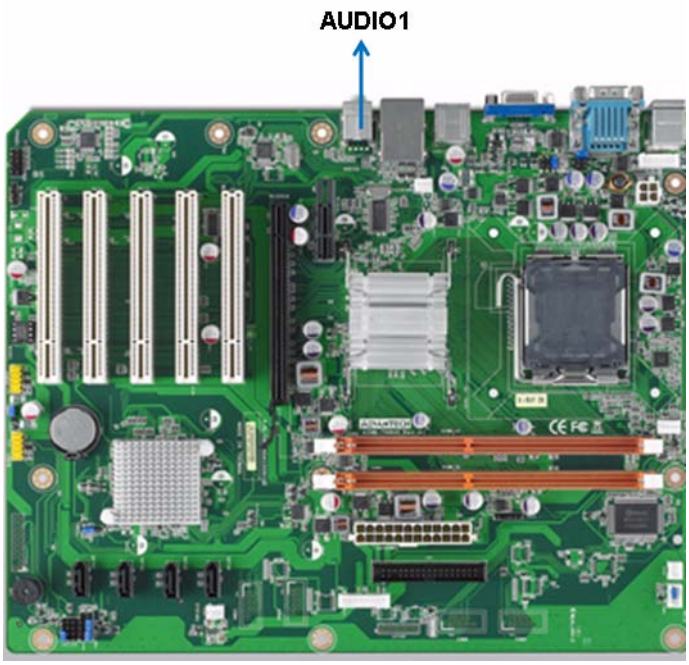
Table 2.2: ATX power supply LED status (No support for AT power)

Power Mode	LED (ATX Power Mode) (On/Off by software or other)	LED (AT Power Mode) (On/Off by switching power supply)	LED (AT Power Mode) (On/Off by front panel switch)
PSON1	2-3 pin closed	1-2 pin closed	Connect 1-2 pin cable with switch
System On	On	On	On
System Status	Fast flashes	Fast flashes	Fast flashes
System Off	Slow flashes	Off	Off

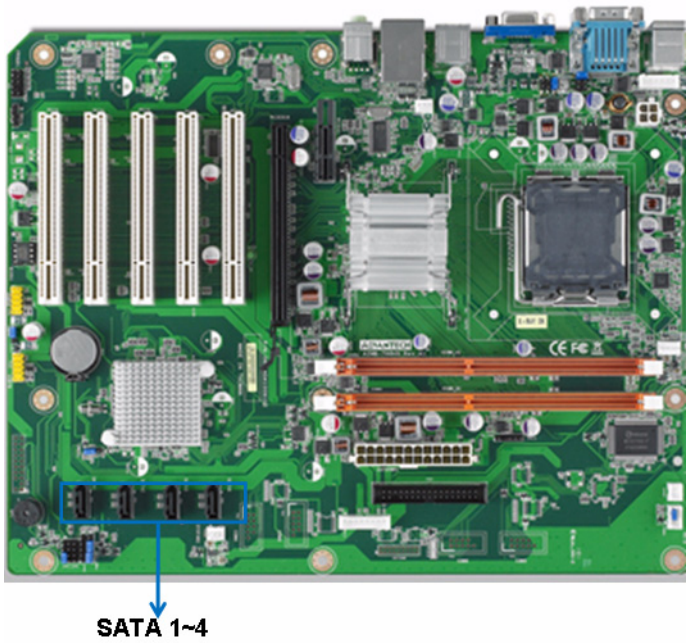


JFP3	
pin.1	PWR_LED+
pin.2	NC
pin.3	PWR_LED-
pin.4	#KB_LOCK
pin.5	GND

2.9 Line Out and Mic In Connector (AUDIO1)



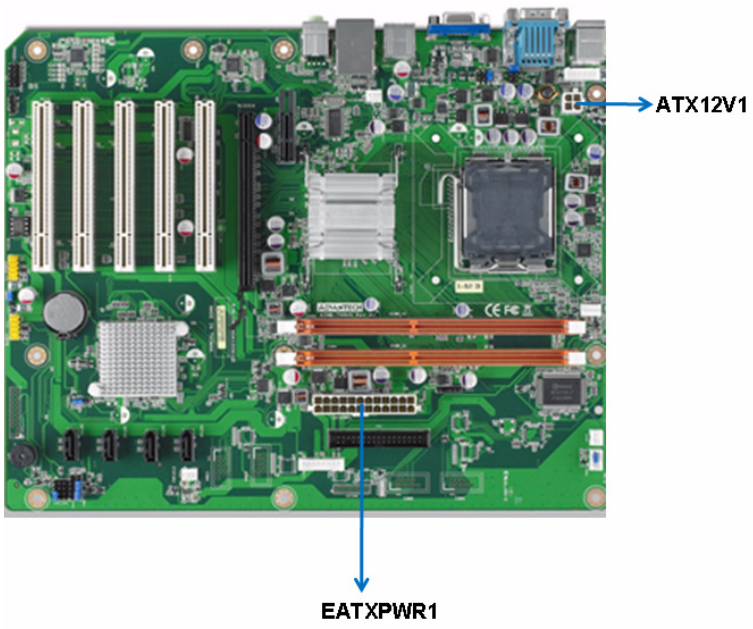
2.10 Serial ATA Interface (SATA 1/2/3/4)

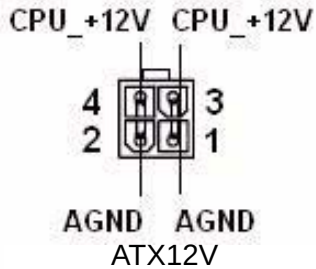


AIMB-769 features four high performance serial ATA interface (up to 300 MB/s) which eases cabling to hard drives with thin and long cables.

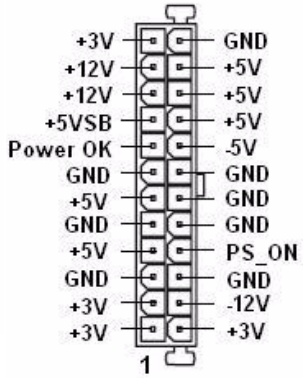
2.11 ATX Power Connector (ATX12V1, EATXPWR1)

These connectors are for ATX power. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.





ATX12V



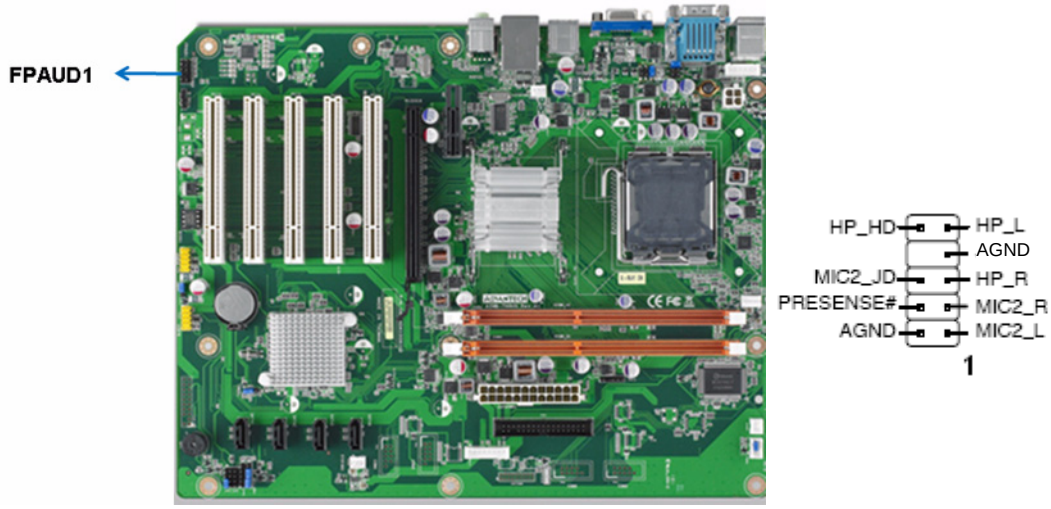
EATXPWR1

Note!

1. *Make sure that your ATX 12 V power supply can provide 8 A on the +12 V lead and at least 1A on the +5 volt standby lead (+5 V_{SB}). The minimum recommended wattage is 230 W, or 300 W for a fully configured system. The system can become unstable and might experience difficulty powering up if the power supply is inadequate.*
2. *You must install a PSU with a higher power rating if you intend to install additional devices.*

2.12 Front Panel Audio Connector (FPAUD1)

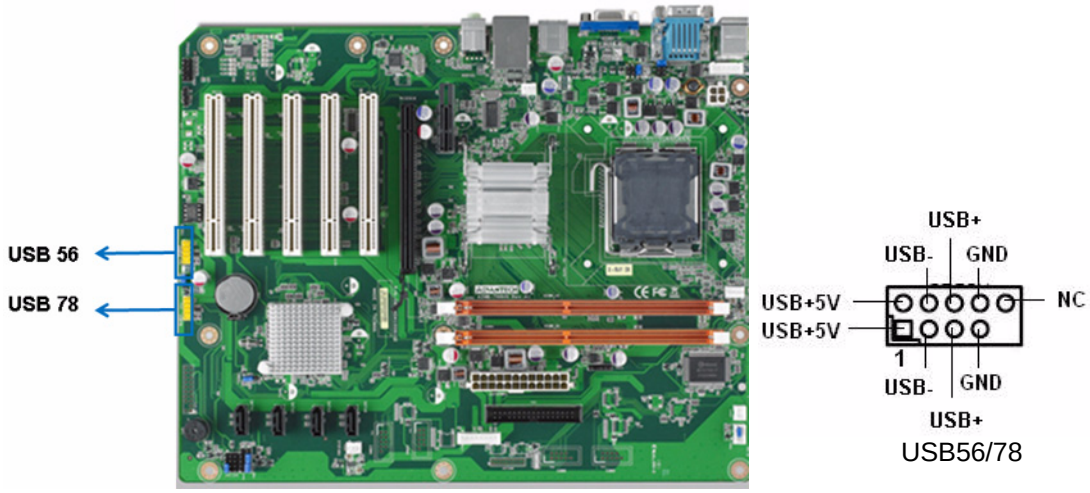
This connector is for a chassis-mounted front panel audio I/O module. Connect one end of the front panel audio I/O module cable to this connector.



Note! *For motherboards with the optional HD audio feature, we recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high definition audio capability.*

2.13 USB 2.0 Connector (USB 56, 78)

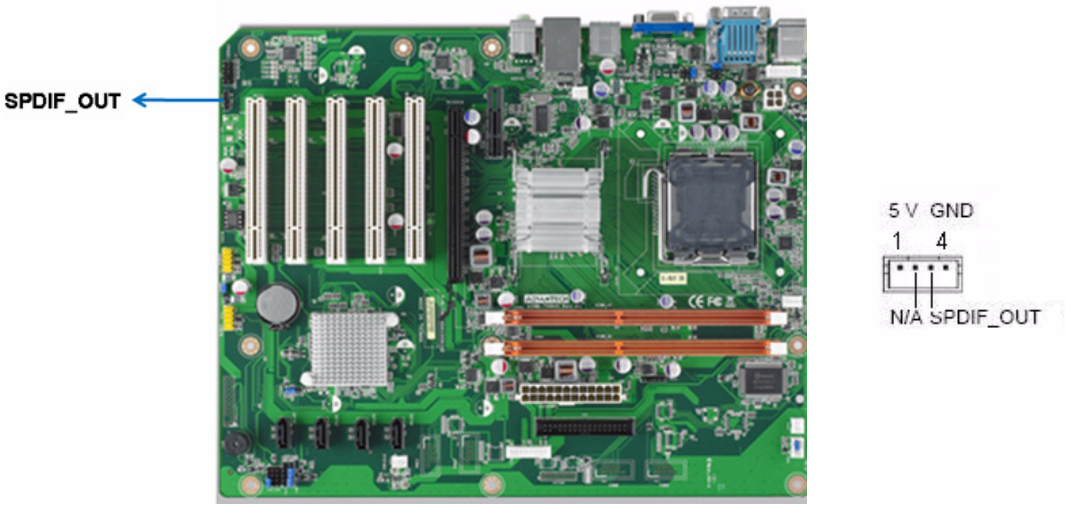
These connectors are for USB 2.0 ports. Connect the USB/GAME module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



Note! *The USB module is purchased separately.*

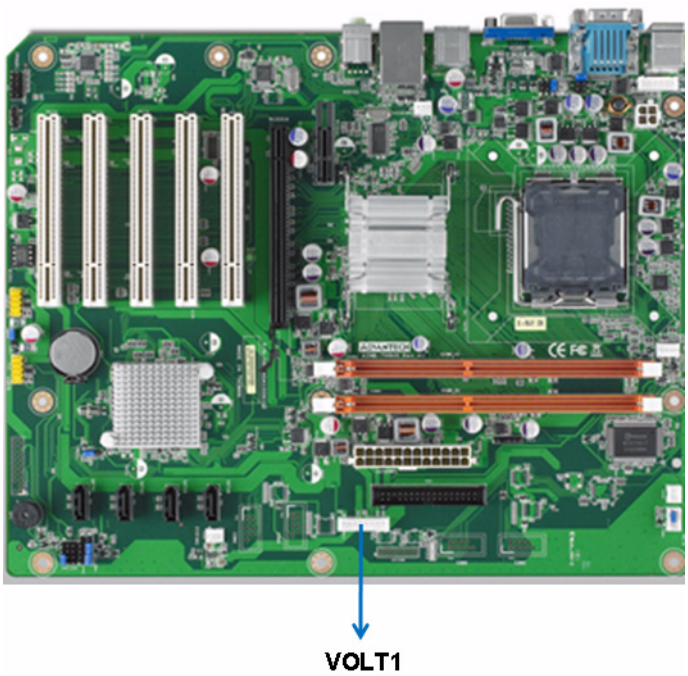
2.14 Digital Audio Connector (SPDIF_OUT1)

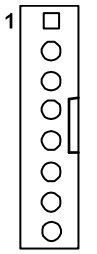
This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.



Note! *The S/PDIF out module is purchased separately.*

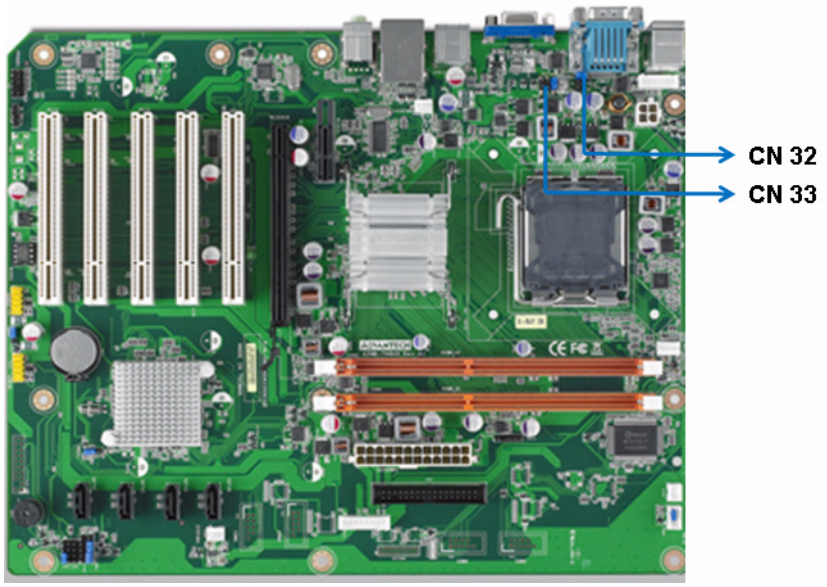
2.15 Connector to alarm board for monitoring (VOLT1)





VOLT1 connects to the alarm board on a Advantech chassis. These alarm boards give warnings if a power supply or fan fails; if the chassis overheats; or if the back-plane malfunctions.

2.16 Serial Port DC Power Switch (CN32, CN33)



1-2: COM port 9th pin for ring function (default)

3-4: COM port 9th pin for +5 V power

5-6: COM port 9th pin for +12 V power

Serial port with DC power function is useful in some industrial devices, so AIMB-769 is able to allow users to set the 9th pin as ring function, +5 V power or +12 V power via CN32 and CN33 jumper. CN32 is to set to COM1 DC power function, and CN33 is to set to COM2 DC power function.

Chapter 3

BIOS Operation

3.1 Introduction

AMI BIOS has been integrated into many motherboards and has been very popular for over a decade. People sometimes refer to the AMI BIOS setup menu as BIOS, BIOS setup or CMOS setup.

With the AMI BIOS setup program, you can modify BIOS settings and control the special features of your computer. The Setup program uses a number of menus for making changes and turning special features on or off. This chapter describes the basic navigation of the AIMB-769 setup screens.

3.2 BIOS Setup

The AIMB-769 series system has AMI BIOS build-in with a CMOS SETUP utility which allows users to configure required settings or to activate certain system features.

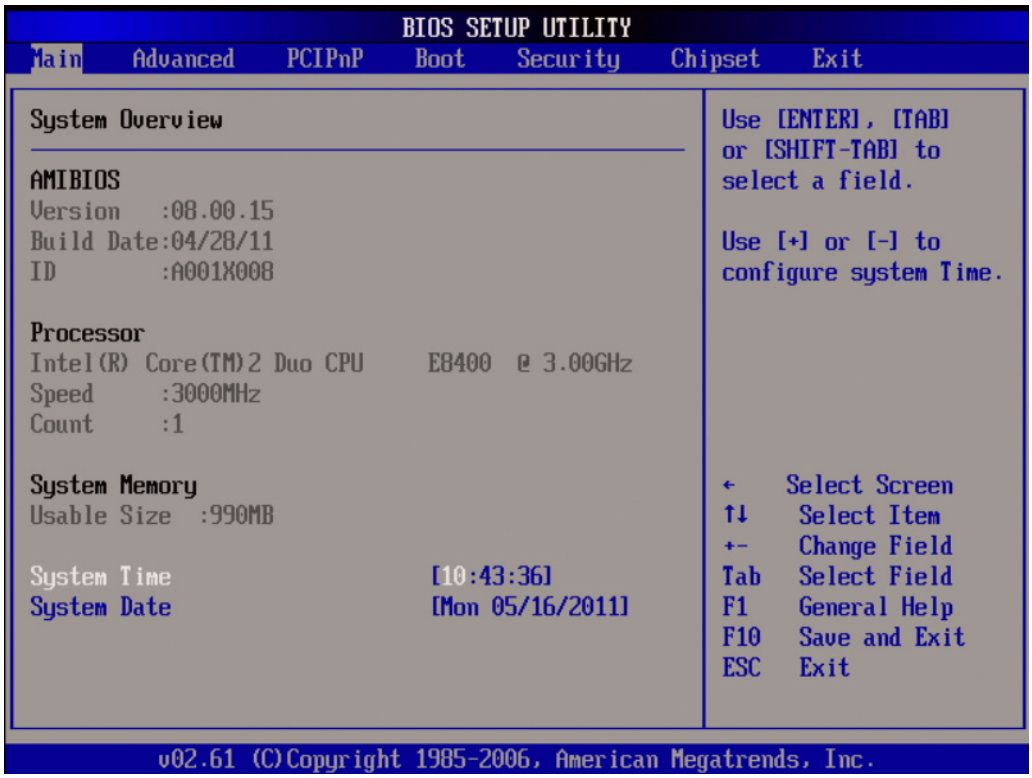
The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to the CMOS RAM.

When the power is turned on, press the <Del> button during the BIOS POST (Power-On Self Test) which will take you to the CMOS SETUP screen.

Control Keys	
< ↑ >< ↓ >< ← >< → >	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit and not save changes into CMOS Sub Menu - Exit current page and return to Main Menu
<Page Up/+>	Increase the numeric value or make changes
<Page Down/->	Decrease the numeric value or make changes
<F1>	General help, for Setup Sub Menu
<F2/F3>	Change color
<F7>	Discard changes
<F8>	Load Fail safe defaults
<F9>	Load optimal defaults
<F10>	Save and Exit

3.2.1 Main Menu

Press <Del> to enter AMI BIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

3.2.1.1 System time / System date

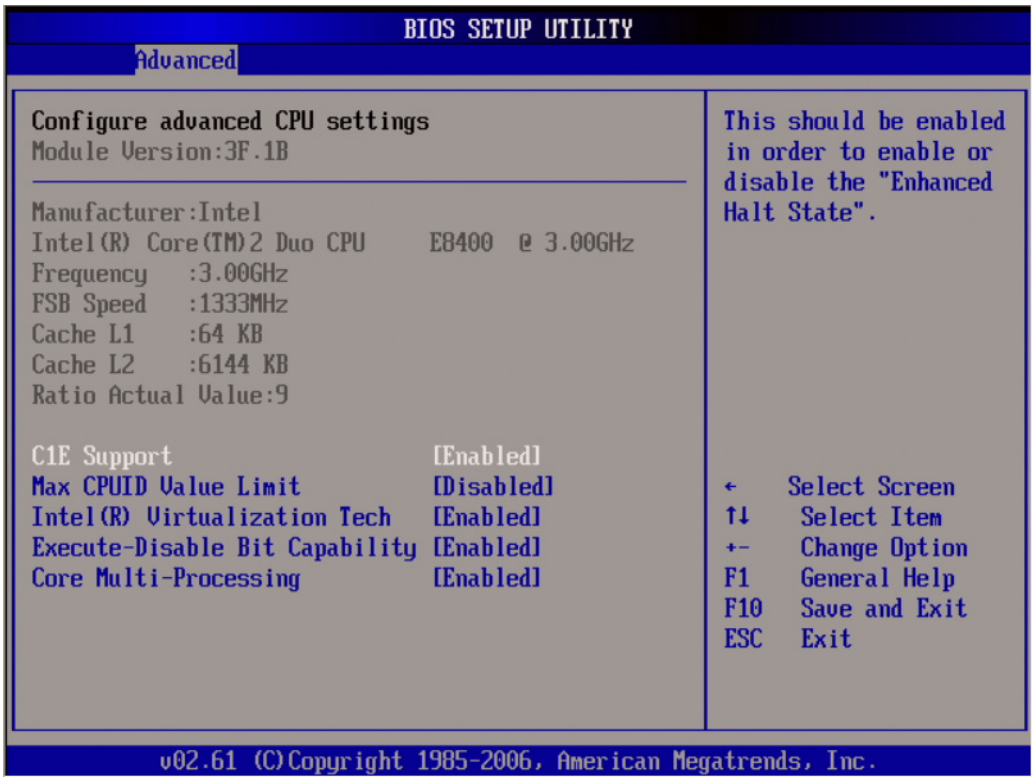
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard.

Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features

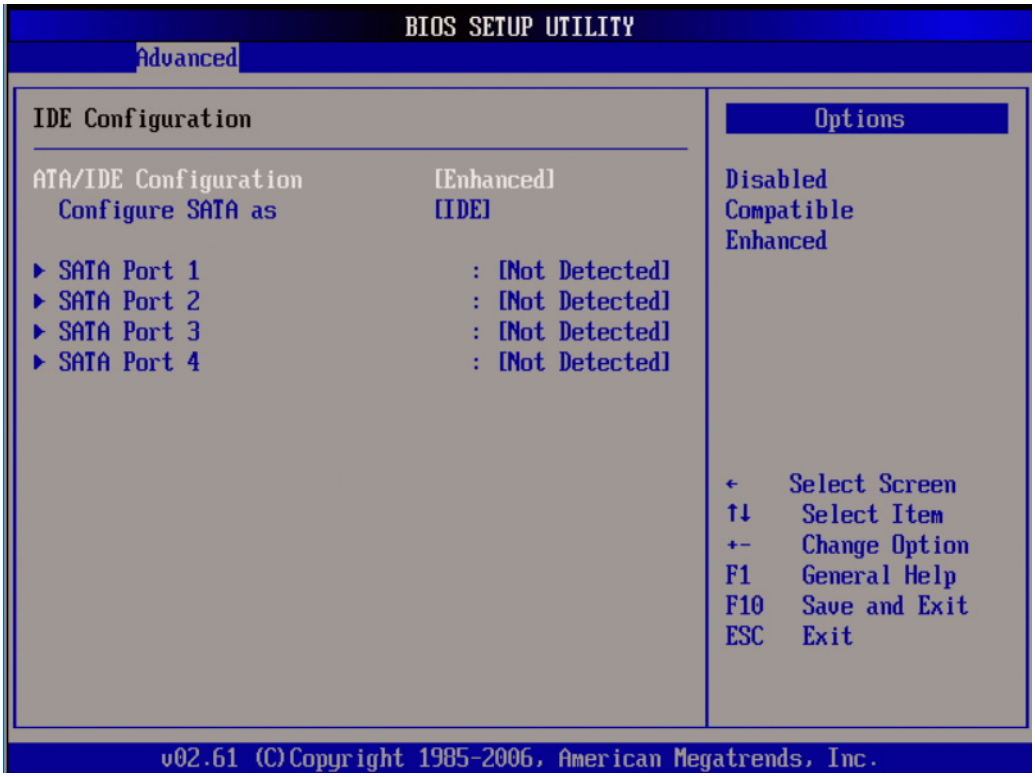
Use the <Arrow> keys to enter the Advanced BIOS Setup. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it and using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.

3.2.2.1 CPU Configuration



- **C1E Support**
  Allows you to enable or disable C1E support. Configuration options are “Enabled” or “Disabled”.
- **Max CPUID Value Limit**
  Setting this item to [Enabled] allows legacy operating systems to boot even without support for CPUs with extended CPUID functions. Configuration options are “Enabled” or “Disabled”.
- **Intel® Virtualization Tech**
  Intel Virtualization Technology (Intel VT) is a set of hardware enhancements to Intel server and client platforms that provide software-based virtualization solutions. Intel VT allows a platform to run multiple operating systems and applications in independent partitions, allowing one system to function as multiple virtual systems.
- **Execute-Disable Bit Capability**
  This item allows you to enable or disable the No-Execution page protection technology.
- **Core Multi-Processing**
  This item allows users to disable one execution core on the CPU die.

3.2.2.2 IDE Configuration



- **ATA/IDE Configuration**
  This can be configured as Compatible or Enhanced.
- **Configure SATA as**
  This can be configured as IDE.
- **SATA1/SATA2/SATA3/SATA4**
  While entering setup, the BIOS automatically detects the presence of SATA devices. This displays the status of SATA device auto-detection.
- **LBA/Large Mode**
  Enables or disables the LBA mode. Setting to [Auto] enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options are “Disabled” and “Auto”.
- **Block (Multi-Sector Transfer)**
  Enables or disables data multi-sector transfers. When set to [Auto], data is transferred from multiple sectors at a time to and from devices if the device supports a multi-sector transfer feature. When set to [Disabled], the data transfer to and from the device occurs one sector at a time. Configuration options are “Disabled” and “Auto”.
- **PIO Mode**
  Select the PIO mode. Configuration options are “Auto”, “0“, “1“, “2“, “3“ and “4“.
- **DMA Mode**
  Select the DMA mode. Configuration option is “Auto”.
- **S.M.A.R.T.**
  Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration options are “Auto”, “Disabled” and “Enabled”.
- **32 Bit Data Transfer**
  Enables or disables 32-bit data transfer. Configuration options are “Disabled” and “Enabled”.

3.2.2.3 Floppy Configuration

- **Floppy A**
  This item is to select the type of floppy drive connected to system.

3.2.2.4 Super IO Configuration

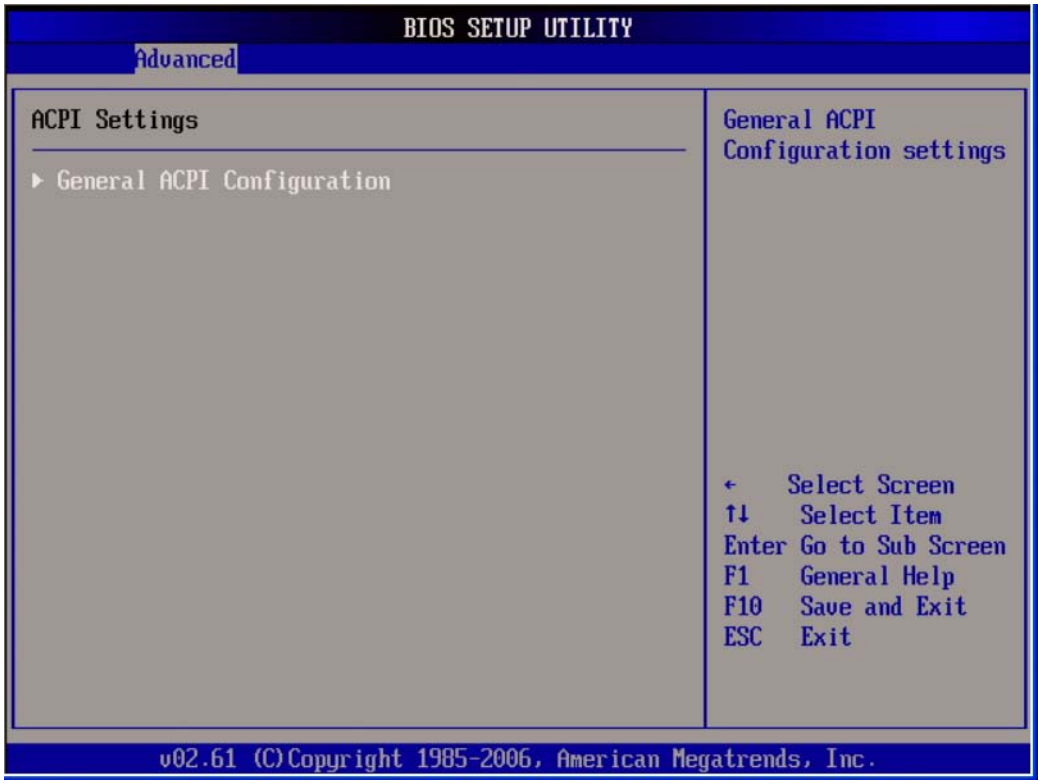
This item enables users to set the Super IO device status, including enabling of serial ports.

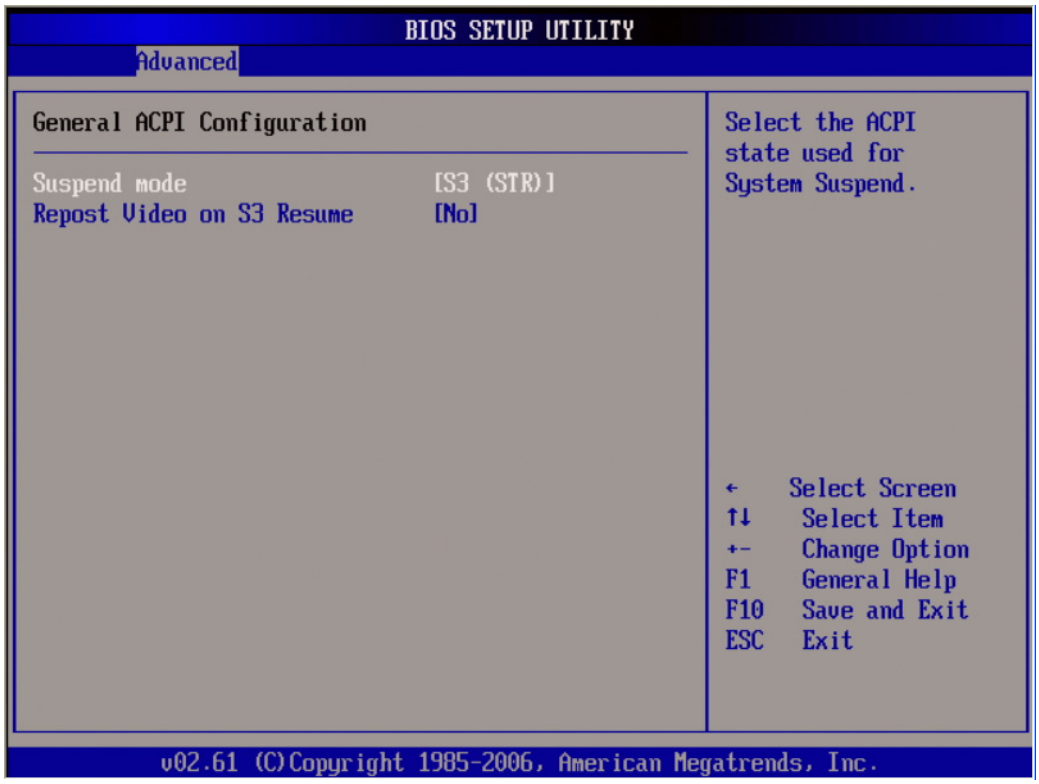
- **Watchdog Timer**
  This item is to set watchdog timer interval.
- **Watchdog Mode**
  The interval of the watchdog timer could be set to "Seconds" or "Minutes".
- **OnBoard Floppy Controller**
  This item is to enable or disable on board floppy.
- **Serial Port Address**
  Allows you to select the serial ports base address.

3.2.2.5 Hardware Health Configuration

- **Chassis Intrusion**
  Gives warning message beeping sounds when the case has been opened.
- **CPU warning temperature**
  Use this to set the CPU warning temperature threshold. When the system CPU reaches the warning temperature, the buzzer will beep.
- **ACPI Shut Down Temperature**
  This screen allows users to set the CPU temperature at which the system will automatically shut down to prevent the CPU from overheating damage.
- **System Temperature**
  The onboard hardware monitor automatically detects and displays the system temperature.
- **CPU Temperature**
  The onboard hardware monitor automatically detects and displays the CPU temperature.
- **CPUFAN Speed**
  Shows CPU FAN speed [xxxxRPM].
- **SYSFAN1 Speed**
  Shows SYSTEMFAN1 speed [xxxxRPM].
- **CPUFAN0 Mode Setting**
  This item is to enable or disable AIMB-769 Smart FAN Control.

3.2.2.6 ACPI Configuration





- **Suspend mode**

  Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend.

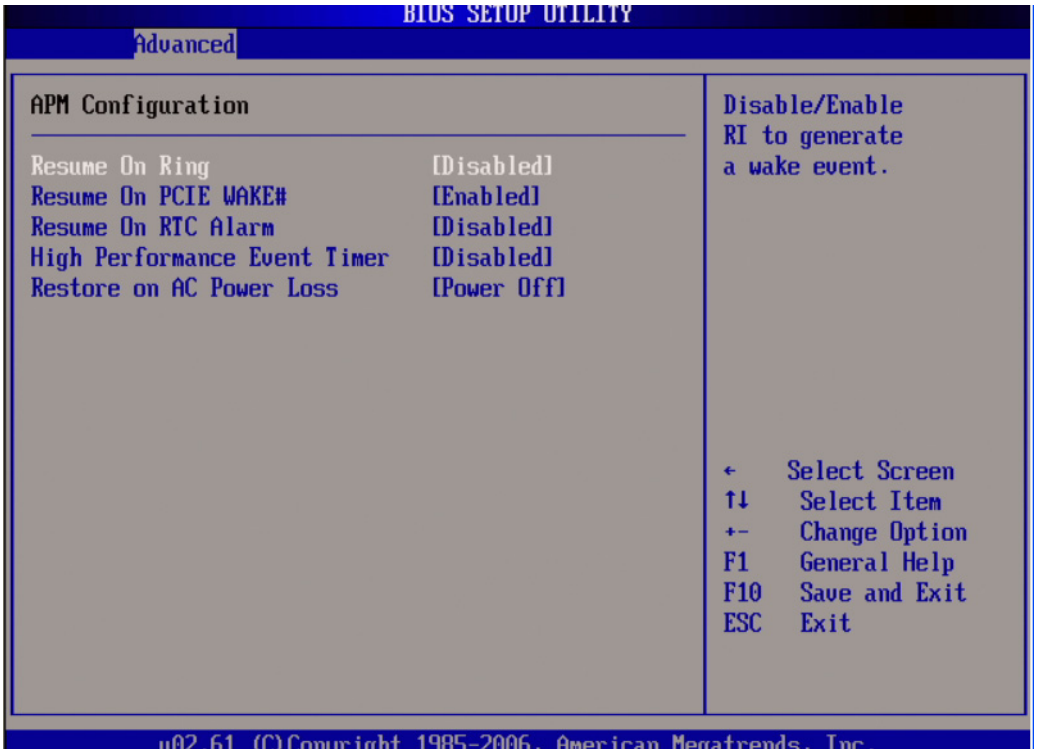
  [Auto] The system automatically configures the ACPI mode.

  [S1 (POS)] Sets the ACPI suspend mode to S1/POS (Power On Suspend).

[S3 (STR)] Sets the ACPI suspend mode to S3/STR (Suspend to RAM)

- **Repost Video on S3 Resume**
  This item determines whether to invoke VGA BIOS post on S3/STR resume.

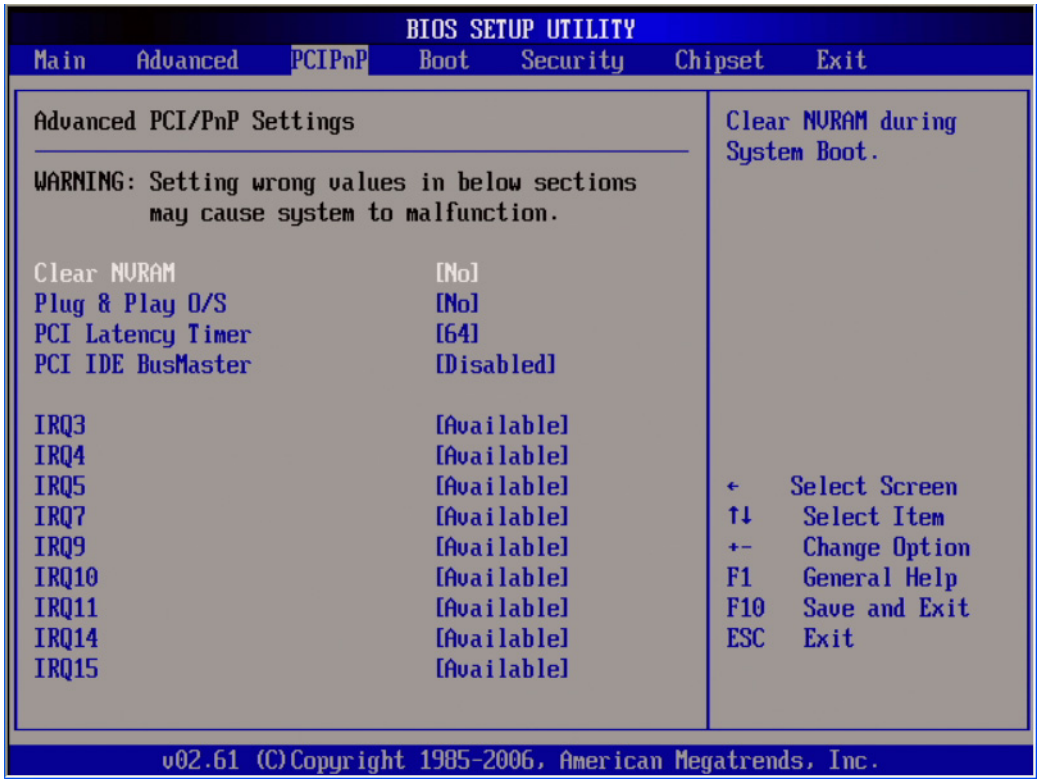
3.2.2.7 APM Configuration



- **Resume On Ring**
  This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external modem receives a call while the computer is in Soft-off mode. Configuration options: [Disabled][Enabled].
- **Resume On PCIE WAKE#**
  This item is to allow wake from PCIE. Configuration options: [Disabled][Enabled].
- **Resume On RTC Alarm**
  Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values. Configuration options:[Disabled][Enabled].
- **High Performance Event Timer**
  Enabled/Disabled high performance event timer.
- **Restore on AC Power Loss**
  When set to [Power Off], the system goes into an off state after an AC power loss. When set to [Power On], the system goes into an on state after an AC power loss. When set to [Last State], the system goes into either an on or off state - whatever the system state was before the AC power loss. Configuration options:[Power Off][Power On][Last State].

3.2.3 Advanced PCI/PnP Setting

Select the PCI/PnP tab from the AIMB-769 setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS setup options are described in this section. The Plug and Play BIOS setup screen is shown below.



3.2.3.1 Clear NVRAM

Set this value to force the BIOS to clear the Non-Volatile Random Access Memory (NVRAM).The Optimal and Fail-Safe default setting is No.

3.2.3.2 Plug & Play O/S

When set to No, BIOS configures all the devices in the system. When set to Yes and if you install a Plug and Play operating system, the OS configures all Plug and Play devices not required for bootup.

3.2.3.3 PCI Latency Timer

Value in units of PCI clocks for PCI device latency timer register.

3.2.3.4 PCI IDE BusMaster

When this is enabled, the BIOS uses PCI busmastering for reading/writing to IDE drives.

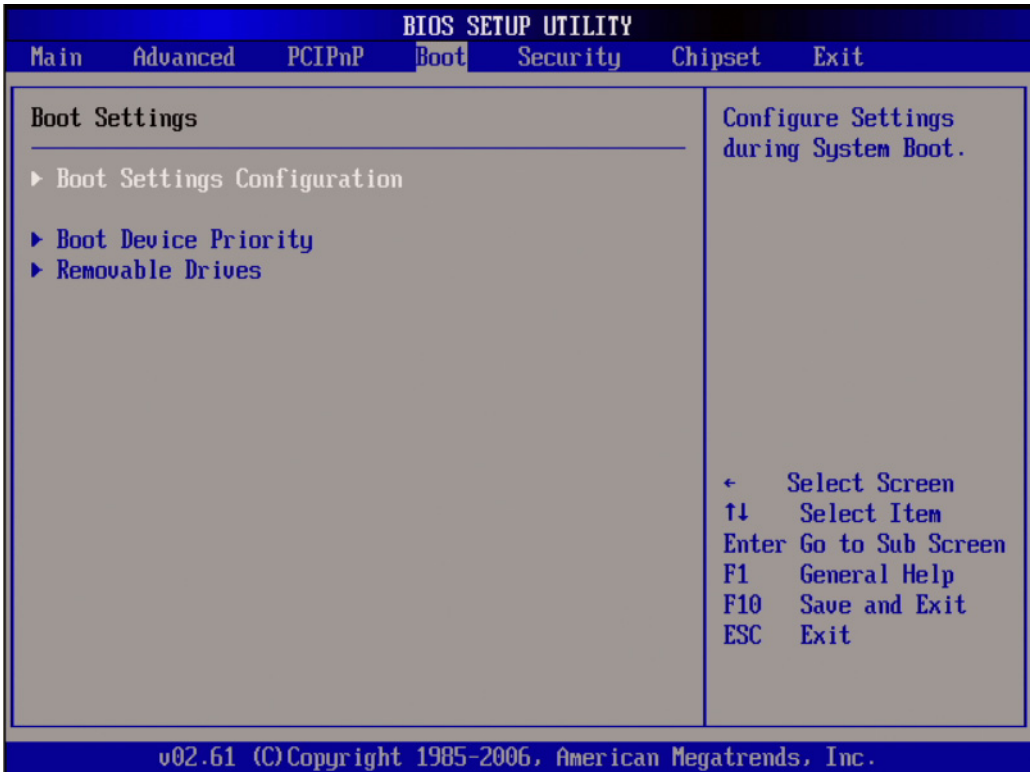
3.2.3.5 IRQ 3,4,5,7.9,10,11,14,15

Two options for this item.

"Available" : Specified IRQ is available to be used by PCI/PnP devices.

"Reserved" : Specified IRQ is reserved for use by Legacy ISA devices.

3.2.4 Boot Setting



BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Disabled]
Bootup Num-Lock [On]
Wait For 'F1' If Error [Enabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.

- **Quick Boot**

  This item allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

- **Quiet Boot**

  If this option is set to Disabled, the BIOS displays normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.

- **Bootup Num-Lock**

Select the Power-on state for Numlock.

- **Wait For F1 If Error**
  Wait for the F1 key to be pressed if an error occurs.

3.2.5 Boot Device Priority

3.2.5.1 1st Boot Device

This item specifies the boot sequence from the available devices.

3.2.6 Hard Disk Drives

3.2.6.1 1st Drive

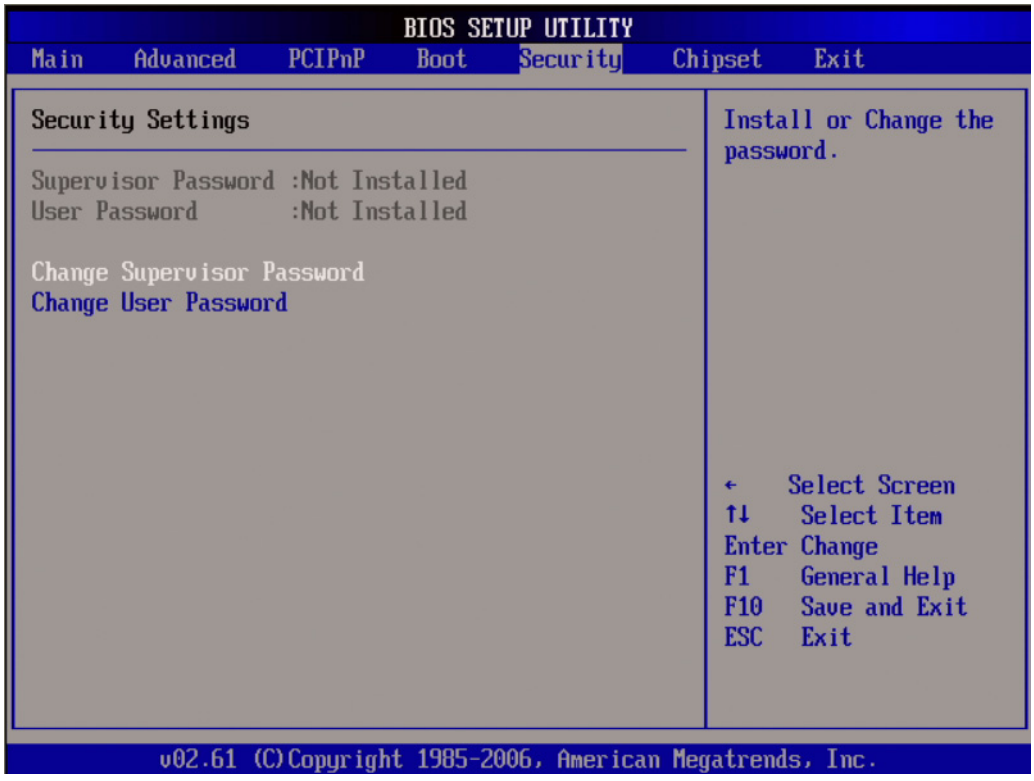
This item specifies the boot sequence from the available devices.

3.2.7 Removable Drivers

3.2.7.1 1st Drive

This item specifies the boot device priority sequence from available removable drives.

3.2.8 Security Setting



Select Security Setup from the AIMB-769 Setup main BIOS setup menu. All Security Setup options, such as password protection is described in this section. To access the sub menu for the following items, select the item and press <Enter>:

3.2.8.1 Change Supervisor / User Password

Provides for either installing or changing the password.

3.2.9 Advanced Chipset Settings

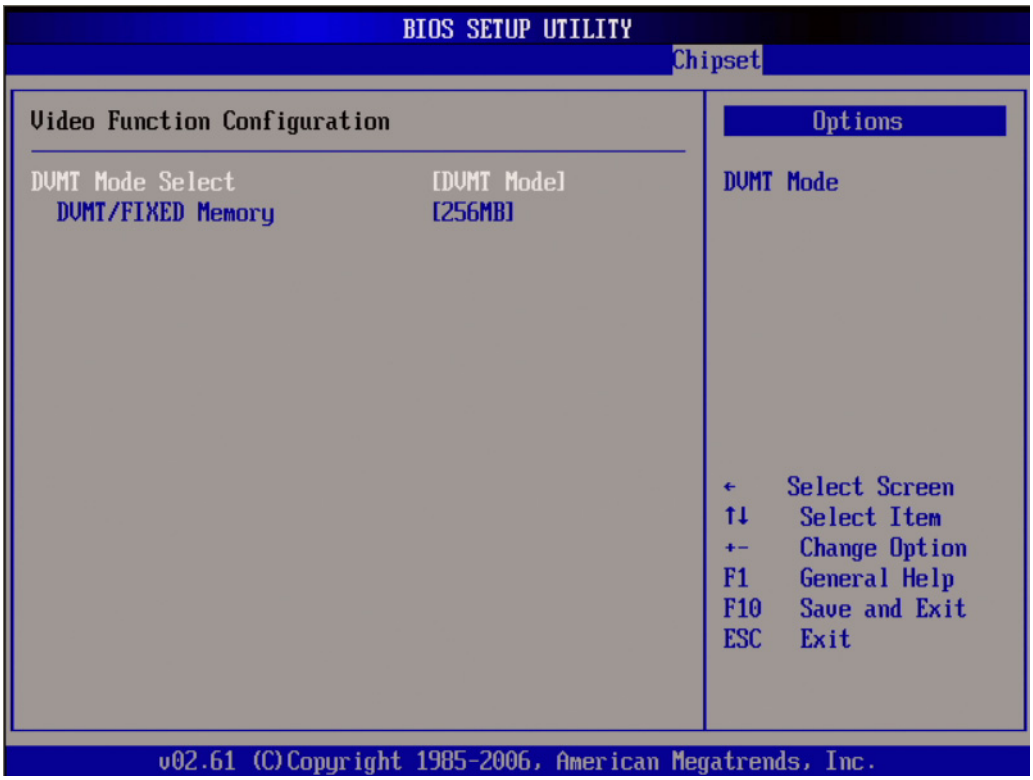
BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below sections
may cause system to malfunction.
North Bridge Configuration
South Bridge Configuration
Configure North Bridge features.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.

3.2.9.1 North Bridge Chipset Configuration

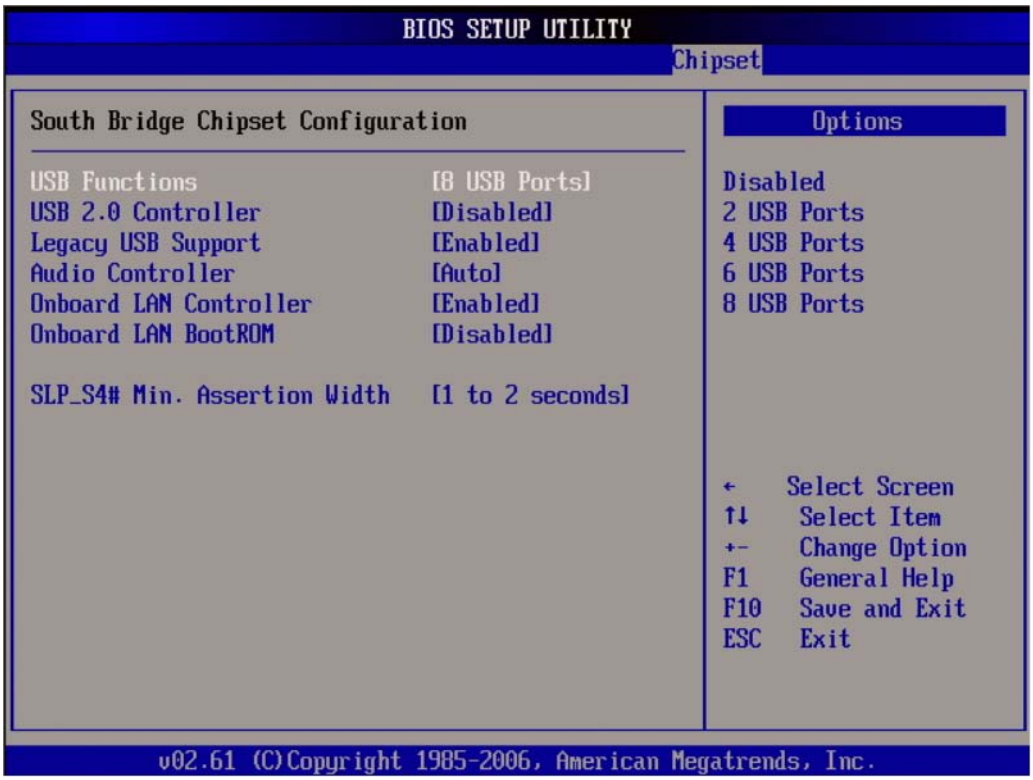
- **Configure DRAM Timing by SPD**
  This item allows you to enable or disable detection by DRAM SPD.
- **Initiate Graphic Adapter**

This item allows you to select which graphics controller is to be used as the primary boot device.

- **IGD Graphics Mode Select**
  Select the amount of system memory used by the Internal graphics device.
- **PEG Port Configuration**
  Enabled/Disabled PEG port configuration.
- **Video Function Configuration**
  Enabled/Disabled video function configuration.



3.2.9.2 South Bridge Chipset Configuration



- **USB Functions**
  Select: Disabled, 2 USB Ports, 4 USB Ports, 6 USB Ports or 8 USB Ports.
- **USB 2.0 Controller**
  Enables or disables the USB 2.0 controller.
- **Legacy USB Support**
  Allows you to enable or disable support for legacy USB storage devices, including USB flash drives and USB hard drives. Setting to [Auto] allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, legacy USB support is disabled. Configuration options:[disabled][enabled][Auto].
- **Audio Controller**
  This item is allow user to set audio controller and suggest to set it as [Auto].
- **Onboard LAN Controller**
  Enables or disables the GbE controller.
- **OnBoard LAN1 BootROM**
  Enables or disables the onboard LAN Boot ROM.
- **SLP_S4# Min. Assertion Width**
  This item allows you to set a delay of a set number of seconds.

3.2.10 Exit Option

BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.

3.2.10.1 Save Changes and Exit

When you have completed system configuration, select this option to save your changes, exit BIOS setup and reboot the computer so the new system configuration parameters can take effect.

Select Save Changes and Exit from the Exit menu and press <Enter>.

1. The following message appears:
   Save Configuration Changes and Exit Now?
   [Ok] [Cancel]
2. Select Ok or Cancel.

3.2.10.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

1. Select Discard Changes and Exit from the Exit menu and press <Enter>.
   The following message appears:
   Discard Configuration Changes and Exit Now?
   [Ok] [Cancel]
2. Select Ok to discard changes and exit.

3.2.10.3 Discard Changes

1. Select Discard Changes from the Exit menu and press <Enter>.

3.2.10.4 Load Optimal Defaults

The AIMB-769 automatically configures all setup items to optimal settings when you select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

Chapter 4

Chipset Software Installation Utility

4.1 Before you begin

To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for AIMB-769 are located on the software installation CD. The driver in the folder of the driver CD will guide and link you to the utilities and drivers under a Windows system. Updates are provided via Service Packs from Microsoft*.

Note! *The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

4.2 Introduction

The Intel® Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI PnP services
- IDE Ultra ATA 100/66/33 and Serial ATA interface support
- USB 1.1/2.0 support
- Identification of Intel® chipset components in the Device Manager
- Integrates superior video features. These include filtered sealing of 720 pixel DVD content, and MPEG-2 motion compensation for software DVD

Note! *This utility is used for the following versions of Windows, and it has to be installed before installing all the other drivers:*

- *Windows 7 (32-bit)*
- *Windows 7 (64-bit)*
- *Windows XP professional edition (32-bit)*
- *Windows XP professional edition (64-bit)*

4.3 Windows XP/Windows 7 Driver Setup

1. Insert the driver CD into your system's CD-ROM drive. You can see the driver folder items. Navigate to the "Step1-Chipset" folder and click "the executable file" to complete the installation of the driver.

Chapter 5

VGA Setup

5.1 Introduction

You need to install the VGA driver to enable the Intel G41 integrated graphics controller.

The Intel G41 integrated graphics controller includes the following features:

- Intel Graphics Media Accelerator X4500: Incorporating the latest Microsoft* DirectX*10 support capabilities, it allows software developers to create lifelike environments and characters. Dual independent display, enhanced display modes for wide screen flat panels, and optimized 3D support delivers an intense and realistic visual experience without requiring a separate graphics card.

5.2 Windows XP/7

Note! *Before installing this driver, make sure the CSI utility has been installed in your system. See Chapter 4 for information on installing the CSI utility.*

Insert the driver CD into your system's CD-ROM drive. You can see the driver folders items. Navigate to the "Step2-Graphic" folder and click the executable file to complete the installation of the drivers for Windows 7, Windows XP.

Chapter 6

LAN Configuration

6.1 Introduction

The AIMB-769 has single Gigabit Ethernet LANs via dedicated PCI Express x1 lanes Realtek RTL8111DL that offer bandwidth of up to 250 MB/ sec, eliminating the bottle-neck of network data flow and incorporating Gigabit Ethernet at 1000 Mbps.

6.2 Features

- Integrated 10/100/100 BASE-T transceiver
- 10/100/1000 BASE-T triple-speed MAC
- High-speed RISC core with 24-KB cache
- On-chip voltage regulation
- Wake-on-LAN (WOL) support
- PCI Express X1 host interface

6.3 Installation

Note! *Before installing the LAN drivers, make sure the CSI utility has been installed on your system. See Chapter 4 for information on installing the CSI utility.*

The AIMB-769's Realtek RTL8111DL Gigabit integrated controllers support all major network operating systems. However, the installation procedure varies from system to system. Please find and use the section that provides the driver setup procedure for the operating system you are using.

6.4 Windows XP/ Windows 7 Setup (REALTEK RTL8111DL)

Insert the driver CD into your system's CD-ROM drive. Select the "04-LAN" folder then navigate to the directory for your OS.

Appendix A

Programming the Watchdog Timer

A.1 Programming the Watchdog Timer

The AIMB-769's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function within the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1.1 Watchdog timer overview

The watchdog timer is built into the super I/O controller W83627DHG-P. It provides the following user-programmable functions:

- Can be enabled and disabled by the user program
- Timer can be set from 1 to 255 seconds or 1 to 255 minutes
- Generates an interrupt or resets signal if the software fails to reset the timer before time-out

A.1.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. You must first assign the address of register by writing an address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

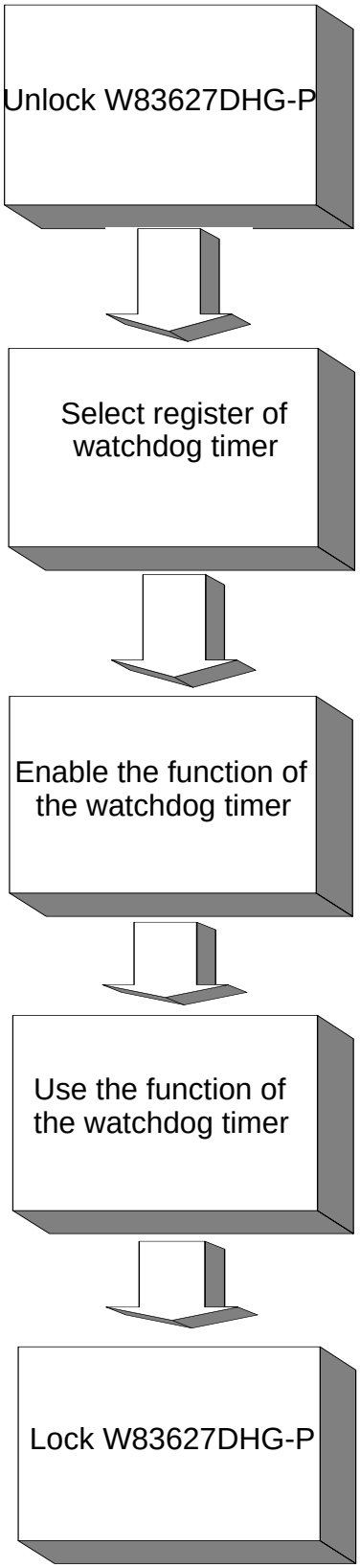

Unlock W83627DHG-P
Select register of watchdog timer
Enable the function of the watchdog timer
Use the function of the watchdog timer
Lock W83627DHG-P

Table A.1: Watchdog Timer Registers

Address of register (2E)	Attribute	
Read/Write	Value (2F) & description	
87 (hex)	-----	Write this address to I/O address port 2E (hex) twice to unlock the W83627DHG-P.
07 (hex)	write	Write 08 (hex) to select register of watchdog timer.
30 (hex)	write	Write 01 (hex) to enable the function of the watch-dog timer. Disabled is set as default.
F5 (hex)	write	Set seconds or minutes as units for the timer. Write 0 to bit 3: set second as counting unit. [default] Write 1 to bit 3: set minutes as counting unit.
F6 (hex)	write	0: stop timer [default] 01~FF (hex): The amount of the count, in seconds or minutes, depends on the value set in register F5 (hex). This number decides how long the watchdog timer waits for strobe before generating an inter-rupt or reset signal. Writing a new value to this reg-ister can reset the timer to count with the new value.
F7 (hex)	read/write	Bit 7:Write 1 to enable mouse to reset the timer, 0 to disable[default]. Bit 6: Write 1 to enable key-board to reset the timer, 0 to disable.[default] Bit 5: Write 1 to generate a timeout signal immedi-ately and automatically return to 0. [default=0] Bit 4: Read status of watchdog timer, 1 means timer is “timeout”.
AA (hex)	-----	Write this address to I/O port 2E (hex) to lock the watchdog timer 2.

A.1.3 Example Program

1. Enable watchdog timer and set 10 sec. as timeout interval.

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Set second as counting unit
Mov al,0f5h
Out dx,al
Inc dx
In al,dx
And al,not 08h
Out dx,al
;--------------------------------------------------------
Dec dx ; Set timeout interval as 10 seconds and start counting
Mov al,0f6h
Out dx,al
Inc dx
Mov al,10
Out dx,al
;--------------------------------------------------------
Dec dx ; Lock W83627HG
Mov al,0aah
Out dx,al
```

2. Enable watchdog timer and set 5 minutes as timeout interval.

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
Mov al,87h
Out dx,al
Out dx,al
```

```
;-------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;-------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;-------------------------------------------------------
Dec dx ; Set minute as counting unit
Mov al,0f5h
Out dx,al
Inc dx
In al,dx
Or al,08h
Out dx,al
;-------------------------------------------------------
Dec dx ; Set timeout interval as 5 minutes and start counting
Mov al,0f6h
Out dx,al
Inc dx
Mov al,5
Out dx,al
;-------------------------------------------------------
Dec dx ; Lock W83627DHG-P
Mov al,0aah
Out dx,al
```

3. Enable watchdog timer to be reset by mouse.

```
;-------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
Mov al,87h
Out dx,al
Out dx,al
;-------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;-------------------------------------------------------
```

```
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable watchdog timer to be reset by mouse
Mov al,0f7h
Out dx,al
Inc dx
In al,dx
Or al,80h
Out dx,al
;--------------------------------------------------------
Dec dx ; Lock W83627DHG-P
Mov al,0aah
Out dx,al
```

4. Enable watchdog timer to be reset by keyboard.

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable watchdog timer to be strobed reset by keyboard
Mov al,0f7h
Out dx,al
Inc dx
In al,dx
Or al,40h
Out dx,al
```

```
;--------------------------------------------------------
Dec dx ; Lock W83627DHG-P
Mov al,0aah
Out dx,al
```

5. Generate a time-out signal without timer counting.

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Generate a time-out signal
Mov al,0f7h
Out dx,al ;Write 1 to bit 5 of F7 register
Inc dx
In al,dx
Or al,20h
Out dx,al
;--------------------------------------------------------
Dec dx ; Lock W83627DHG-P
Mov al,0aah
Out dx,al
```

Appendix B

I/O Pin Assignments

B.1 USB Header (USB56)

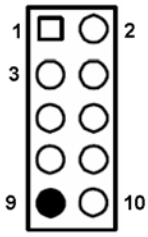


Table B.1: USB Header (USB56)

Pin	Signal	Pin	Signal
1	USB5_VCC5	2	USB6_VCC5
3	USB5_D-	4	USB6_D-
5	USB5_D+	6	USB6_D+
7	GND	8	GND
9	Key	10	GND

B.2 USB Header (USB78)

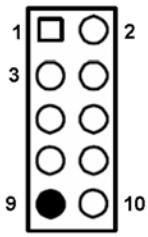


Table B.2: USB Header (USB78)

Pin	Signal	Pin	Signal
1	USB7_VCC5	2	USB8_VCC5
3	USB7_D-	4	USB8_D-
5	USB7_D+	6	USB8_D+
7	GND	8	GND
9	Key	10	GND

B.3 VGA Connector (VGA1)

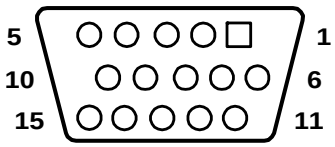


Table B.3: VGA Connector (VGA1)			
Pin	**Signal**	**Pin**	**Signal**
1	VGA_R	9	CRT_VCCIN
2	VGA_G	10	GND
3	VGA_B	11	N/C
4	N/C	12	V_SDAT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	V_SCLK
8	GND		

B.4 PS/2 Keyboard and Mouse Connector (KBMS1)

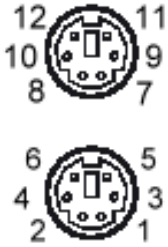


Table B.4: PS/2 Keyboard and Mouse Connector (KBMS1)	
Pin	**Signal**
1	KB DATA
2	N/C
3	GND
4	KB VCC
5	KB CLK
6	N/C
7	M_DATA
8	N/C
9	GND
10	M_VCC
11	M_CLK
12	N/C

B.5 CPU Fan Power Connector (CPUFAN1)

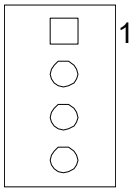


Table B.5: CPU Fan Power Connector (CPUFAN1)

Pin	Signal
1	GND
2	+12 V PWM
3	DETECT
4	NC

B.6 System Fan Power Connector (SYSFAN1/ SYSFAN2)

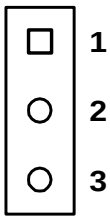
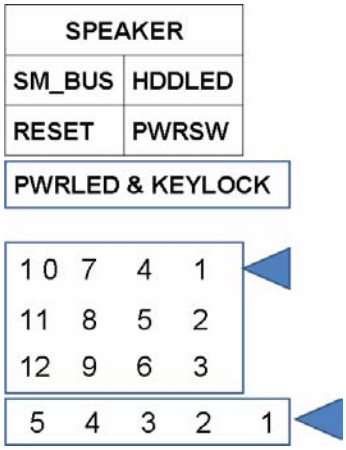


Table B.6: System Fan Power Connector (SYSFAN1/SYSFAN2)

Pin	Signal
1	GND
2	+12V PWM
3	DETECT

B.7 Front Panel Connectors (JFP1/2)



B.7.1 Power LED & Keyboard Lock Connector (JFP3)

You can use an LED to indicate when the single board computer is on. Pin 1 of JFP3 supplies the LED's power, and Pin 3 is the ground.

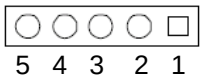


Table B.7: Power LED & Keyboard Lock Connector (JFP3)

Pin	Function
1	LED power
2	NC
3	GND
4	KEYLOCK#
5	GND

B.7.2 Power switch/HDD LED/SMBus/Speaker (JFP1/JFP2)

The single board computer has its own buzzer. You can also connect it to the external speaker on your computer chassis.

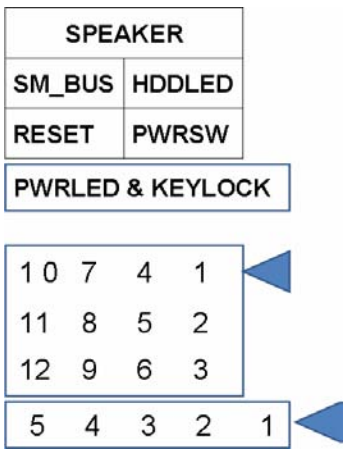


Table B.8: Power Switch/HDD LED/SMBus/Speaker (JFP1/JFP2)			
Pin	**Signal**	**Pin**	**Signal**
1	5 V	2	HDDLED+
3	PWR	4	SPK
5	HDDLED-	6	GND
7	SPK	8	SMB_DAT
9	SYS_RST	10	SPK
11	SMB_CLK	12	GND

B.8 ATX1 12 V Auxiliary Power Connector (ATX12V)

Table B.9: ATX1 12 V Auxiliary Power Connector (ATX12V1)	
Pin	**Signal**
1	GND
2	GND
3	+12 V
4	+12 V

B.9 ATX Power Connector (EATXPWR1)

Table B.10: ATX Power Connector (ATX2)			
Pin	**Signal**	**Pin**	**Signal**
13	3.3 V	1	+3.3 V
14	-12 V	2	+3.3 V
15	GND	3	GND
16	PSON	4	+5 V
17	GND	5	GND
18	GND	6	+5 V
19	GND	7	GND
20	-5 V	8	POK
21	+5 V	9	5 VSB
22	+5 V	10	+12 V
23	+5 V	11	+12 V
24	GND	12	+3.3 V

B.10 USB/LAN ports (LAN1_USB34)

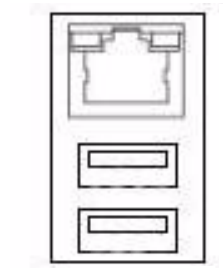
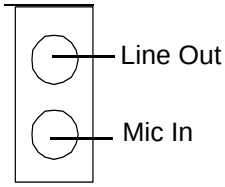


Table B.11: USB Port			
Pin	**Signal**	**Pin**	**Signal**
1	VCC	3	Data0+
2	Data0-	4	GND

Table B.12: Ethernet 10/100/1000 Base-T RJ-45 Port			
Pin	**Signal**	**Pin**	**Signal**
1	XMT+	5	N/C
2	XMT-	6	RCV-
3	RCV+	7	N/C
4	N/C	8	N/C

B.11 Line Out, Mic In Connector (AUDIO1)



B.12 Serial ATA1 (SATA1)

Table B.13: Serial ATA0 (SATA1)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	SATA_0TX+
3	SATA_0TX-	4	GND
5	SATA_0RX-	6	SATA_0RX+
7	GND	8	

B.13 Serial ATA2 (SATA2)

Table B.14: Serial ATA1 (SATA2)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	SATA_1TX+
3	SATA_1TX-	4	GND
5	SATA_1RX-	6	SATA_1RX+
7	GND	8	

B.14 Serial ATA3 (SATA3)

Table B.15: Serial ATA2 (SATA3)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	SATA_2TX+
3	SATA_2TX-	4	GND
5	SATA_2RX-	6	SATA_2RX+
7	GND	8	

B.15 Serial ATA4 (SATA4)

Table B.16: Serial ATA3 (SATA4)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	SATA_3TX+
3	SATA_3TX-	4	GND
5	SATA_3RX-	6	SATA_3RX+
7	GND	8	

B.16 AT/ATX Mode (PSON1)

Table B.17: AT/ATX Mode (PSON1)			
Pin	**Signal**	**Pin**	**Signal**
1	#PSON_SIO (to super IO)	2	#PSON (to power supply)
3	GND		

B.17 FPAUD1(Front Panel Audio Connector)

Table B.18: Front Panel Audio Connector (FPAUD1)

Pin	Signal
1	MIC2_L
2	AGND
3	MIC2_R
4	PRESENSE
5	LIN2_R
6	MIC_JD
7	GND
8	N/A
9	LIN2_L
10	LIN_JD

B.18 System I/O Ports

Table B.19: System I/O Ports

Addr. range (Hex)	Device
000-01F	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game I/O
278-27F	Parallel printer port 2 (LPT3)
290-297	On-board hardware monitor
2F8-2FF	Serial port 2
Serial port 2	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

B.19 JCASE1(Open Case Connector)

Table B.20: Case Open Connector(JCASE1)	
Pin	Signal
1	CASE_OPEN#
2	GND

B.20 DMA Channel Assignments

Table B.21: DMA Channel Assignments	
Channel	**Function**
2	Floppy disk (8-bit transfer)
3	ECP Printer Port (LPT1)
4	Cascade for DMA controller 1

B.21 Interrupt Assignments

Table B.22: Interrupt Assignments		
Priority	**Interrupt#**	**Interrupt source**
1	NMI	Parity error detected
2	IRQ0	System timer
3	IRQ1	Keyboard
4	IRQ8	System CMOS/real time clock
5	IRQ9	Microsoft ACPI-Compliant System
6	IRQ10	Serial communication port 4
9	IRQ13	Numeric data processor
10	IRQ14	Primary IDE Channel
11	IRQ15	Secondary IDE Channel
12	IRQ3	Serial communication port 2
13	IRQ4	Serial communication port 1
14	IRQ5	Serial communication port 3
15	IRQ6	Standard floppy disk controller

B.22 1st MB Memory Map

Table B.23: 1st MB Memory Map

Addr. range (Hex)	Device
E0000h - FFFFFh	BIOS
CD000h - DFFFFh	Unused
C0000h - CBFFFh	VGA BIOS
A0000h - BFFFFh	Video Memory
00000h - 9FFFFh	Base memory

ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

No part of this publication may be reproduced in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission of the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies.

© Advantech Co., Ltd. 2011